A Survey of Factors Affecting the Use of Audio-Visual Media at the Universidad Ibero Americana in Mexico City

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ABSTRACT

A Survey of Factors Affecting the Use of Audio-Visual Media at the Universidad Ibero Americana in Mexico City.

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This study attempts to determine the reasons for the use and non-use of audio-visual equipment by professors of the Universidad Ibero Americana in Mexico City. The two facets being explored are the actual use of the audio-visual equipment by the professors and the factors that affect their attitudes toward the media.

A questionnaire with questions gathering general information and a Likert-type scale for attitude measurement was used. A three month record of the use of equipment in the audio-visual centre was made. Frequency distributions, chi squares and factor analysis were part of the statistical analysis for data gathered.

Several hypotheses were raised about the relationship between use or non-use of the equipment or materials, and factors like subject matter of courses taught, age, sex, experience of teachers, availability and accessibility of equipment, awareness of the existence of equipment and teachers' attitudes toward audio-visual media.

Results taken from a sample of 282 professors showed positive relationships between: availability of equipment and the use of the media; teaching experience of the professors and their attitudes; and subject matter of courses and the use of equipment. No relationships were found between the use of the equipment and age, sex, time dedicated to teaching, teaching experience and equipment accessibility.

Possible methods to improve the patterns of usage and teachers' attitudes to audio-visual media are also provided in this study.

TO MY PARENTS.....

without all their support, patience and love, it would not have been possible.

"... a man who is apt to teach, will devise some ingenious method of enlightening the mind of his pupil, so that he shall lay hold of the idea as with a manly grasp, and make it his own forever."*

* David P. Page, Theory and Practice of Teaching. (New York: A. S. Barnes and Co., 1858), p. 318.

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CHAPTER I

STATEMENT OF THE PROBLEM

The problem to be dealt with in this project is the use and non-use of audio-visual equipment in an institution of higher education in Mexico City. Some questions have been raised in regard to this problem. Is the faculty in the university indeed using the audio-visual equipment? What general factors affect the use and non-use of the audio-visual media? What are the attitudes of the faculty toward the use of the audio-visual media?

"The Universidad Ibero Americana in Mexico City has some audio-visual equipment available (see appendix E). The equipment is being used by a limited number of professors and students, and is not being exploited to its full capacity."*

The purpose of this study is first to determine the use of the existing equipment at the university, and secondly, to find out the reasons for the use and non-use of that equipment that are expressed by the professors, and thirdly, to establish their attitudes toward the use of audio-visual media in their classes.

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*Personal interview tih F. Weber, Director of the Teacher Training Department at the Universidad Ibero Americana, 1976.

Introduction

There have been a number of studies in the area of professors' attitudes to instructional media in higher education, but there is still not much known because of a lack of consistency in published results. If any type of equipment or materials is to be used for educational purposes, it remains for the professors alone to decide whether or not to use it; they also decide how it is to be used. "Academic planning and educational development are a major responsibility of the faculty, and any innovation, change or improvement needs a commitment from the faculty". (Dietrich & Johnson, (1967), p. 206).

In order for the university to keep improving its services to professors and students, it needs to know the way the professors feel toward these services. Teachers' attitudes in this area are important because the teacher may unintentionally influence pupils' learning for new media - even if the information to be learnt is in a form as highly structured as a teaching program. These attitudes are also important because whatever equipment is made available to the school, the professor controls the extent of its use in the classroom.

Since the end of W.W.II, the field of instructional media has experienced steady growth in its nature and scope and in the last decades the schools and colleges have received considerable financial support for purchasing audio-visual equipment and materials, and for the training of school

personnel to facilitate the use of educational media. But on the other hand, recent studies show that even though professors have a high level of media competence and equipment is available to them in their buildings, the majority of professors do not make extensive use of educational media.*

There is a definite lack of appreciation and understanding of the audio-visual field and a lack of adequate and appropriate materials in the educational institutions. An audio-visual service can help, even with its limitations, but needs to recognize what kinds of deterrents can be overcome.

Administrators speak for change, faculties insist upon change and students demand change. Yet, when given the opportunity to effect change, these agents generally accomplish little aside from introducing some innovation which, more often than not, is applied to the educational process in a traditional fashion.

Technology has given education and the educative process a tremendous and sometimes bewildering array of innovations. Yet there is criticism of schools for what is commonly called a "lag" in the acceptance of these new ideas.

Higher education, as distinguished from primary and secondary education, can be characterized by even more traditional patterns. Most of these traditions have their roots in the Renaissance, the period during which the European University systems were developed. To a considerable extent,

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*Personal interview with F. Weber, Director of the Teacher Training Department at the Universidad Ibero Americana, 1976; See also, Review of Literature, Chapter 2.

the university community has been successful in resisting change, even though a dynamic and far more complex society has evolved around it. Such resistance to change has come for the most part, from faculty members, who frequently emerge as "champions" for the preservation of the old institutional order.

However, the relationship between the university and its social context has changed. Higher education has become everybody's business. Universities have a different role from that which persisted in the early part of this century. Until that time, the isolation of the universities was complete, and "universal" knowledge offered few, if any, pragmatic solutions to everyday problems. In our day, the universities are looked upon as sources which will provide solutions to a myriad of practical problems. The activities in the university must change, for there is a great deal more interaction between the community and the university. In our age, information accumulates at such astronomic speed that the university can no longer provide its students with a body of knowledge which will be adequate for the rest of their lifes.

In the recent years the population explosion in higher education has forced educators to consider numerous changes in this area. Unless universities prepare themselves for this onslaught, educational quality will indeed deteriorate and this could mean a great loss to society, as well as to the academic community.

The higher education seems historically to have been more resistant to change than have other institutions. There is a paradox here--on the one hand university professors, perhaps more than any other group, are intent upon extending knowledge in their fields of specialization. Yet they reject new ways of teaching. Evans and Leppmann (1968) (among other researchers) regard attitudinal barriers as among the more forbidding blocks to the acceptance of innovations. However they are not unaware of other classes of barriers. They note that "the economics of the university system and the entire budgeting procedures too often appear to be dedicated to maintaining the status quo" (p. 132).

Torkelson (1961), in a report to the Regional Research Conference on Newer Educational Media, noted evidence which seems to point out that present knowledge in newer media has not been applied by professors in their jobs, by professors concerned with professor education, nor by school administrators in implementing their instructional programs.

In 1965, he also concluded in a study on the improvement the preparation of pre-service teachers in the use of audio-visual materials, that the professors did not take advantage of the materials and equipment available in the schools.

We can easily agree with Trotter's finding that "educational technology (in the sense of various kinds of hardware applied to the production and delivery of instructional

materials) has not been fully and effectively used in universities (or any where else in the educational system for that matter)." (Trotter, 1970, pp. 53-54)

Torkelson stresses the fact that in the teaching process the human tutor is indispensable. Technology and human beings should join their unique forces and explore how they can work together in terms of their own learning goals and procedures. "Teachers and researchers should work together to improve the effectiveness of educational media." (Torkelson, 1968)

Special importance should be given to the teacher in schools and universities. They are the key figures in education and in any improvement or innovation that takes place in that process. Unruh and Alexander say this in these words: "Any significant change in education must ultimately affect the relationship of the professors and the taught. Whether it is change desired by the teacher himself, or in the plans, materials, processes, organizations he uses--and it may be impossible to separate change in the thing from change in the person--the professor is intrinsically involved. If the teacher seeks change and is involved in making it, its chances of success are high. If the teacher avoids change, and is involved reluctantly, if at all, in making its chances of success are correspondingly low." (Unruh and Alexander, 1974, p. 243)

Many researchers can be found commenting more specifically on the low quality and quantity of the technology

and on the reasons for the non-application of the technology. Some say that professors' attitudes are not conductive to educational technology. "Teachers were found to have significantly less favourable attitudes toward terms and ideas that connote automation than they did toward comparable terms not identified with automation. . . It is possible that professors who dislike certain kinds of materials may affect the achievement of students by the use of such materials in a negative way. Attention should be paid to connecting such attitudes during the teachers' initial contact with such materials." (Tobias, 1968) Hunter (1967), in his experience in training teachers for television utilization also concludes that unless teachers' attitudes are favourable towards the usage of media, good results on education are not possible.

Another reason for the non-use of audio-visual materials and equipment is mentioned by Williams (1962) and Wyker (1969) who say that professors are not trained and helped enough to use educational technology.

Other reasons given to why educational technology is not applied more are the poor design of materials, equipment and installations; inaccessibility which is an annoying problem and time-consuming; low probabilities of having the equipment ready to use when needed and obsolescence of materials and equipment. These are some of the reasons given by Billows (1970) and the Commission on Instructional Technology (1969).

Van Wyck (1971) states that major reasons for the non-use of educational technology are the resistance and hostility of some educators. Some resist because they favour traditional methods of instruction and shy away from new challenges, while others are disenchanted with results of prior experiencies. Any change affecting the teacher - student communication role is likely to elicit some type of resistance. There is a feeling of some teachers that media innovations tend to mechanize the instructional process, resulting in a loss of feedback between student and teacher. Aside from the financial reason, Van Wyck mentions other reasons for resistance to use of educational technology: "the complexity of an innovation, particularly involving technology, has a strong influence on acceptance, resistance or rejection. Resistance is inevitable if equipment is not technically reliable, easily obtainable, and relatively simple to operate". (Van Wyck, 1971, p. 90).

Van Wyck lists nine reasons for teachers' opinions on rejection of innovative media, after a review of several studies: "1) Rejection through ignorance - the innovation was unknown or its complexity led to a lack of understanding; 2) Rejection through default - admitting a knowledge of the innovation without any interest in its use; 3) Rejection by maintaining the status quo - innovation not accepted because it had not been used in the past; 4) Rejection through societal moves - professors feel society finds the innovation unacceptable and will not use it; 5) Rejection through

interpersonal relationships--colleagues do not use it, therefore neither will I; 6) Rejection through erroneous logic--the use of rational but unfounded reasons for the rejection of worthy innovations; 7) Rejection through substitution--using one practice over another practice requiring the use of an innovation; 8) Rejection through fulfillment--professor is confident of the success of using his own methods, making innovation unnecessary; 9) Rejection through experience--discussing with others the failure of some innovations." (Van Wyck, 1971, pp. 90-91).

According to Eichholz and Rogers, "if adoption is the full-scale use of an innovation, rejection is the non-use of an innovation. . . The process whereby adopters ultimately use an innovation has five distinct and separate stages. Awareness, interest, evaluation, trial and adoption." If any of these five stages has not been developed in a proper manner, then a rejection is likely to occur. It is therefore necessary to have a knowledge of the situation in order to determine where the "lag" is (Eichholz and Rogers, 1964, p. 308).

The reasons for the failure of innovation in education are given by Miles. These are: "conservative reaction, inadequate planning, insufficient attention to preparing professors for the change, lack of commitment by teachers or community, and deficiencies in resources or power" (Miles, 1964, p. 65).

Torkelson condensed some reasons for the non-application of instructional technology (Torkelson, 1972, p. 91). These are:

1) "An over-expectation of effects from gadgets and process adopted to instruction from some other area such as industry.

2) The use of measurement techniques for media which are insensitive to dimensions of human response that may be of greater importance than the "behavioral objectives" they are designed to measure.

3) A scientist outlook which ignores the importance and operation of intuition in classroom interaction and which prescribes narrow behavioral objectives.

4) Institutional inertia in change, innovation, and non-adaptability when innovation is tried.

5) An irrelevance of much learning psychology to classroom teaching situations as they exist in reality.

6) A curriculum frequently misphased, over-intellectualized, and irrelevant to individual needs and the social milieu of large numbers of students.

7) An over-extended preparatory education and an under-developed continuing education.

8) A narrow exclusiveness in the educational establishment, including the U.S. Office of Education, ignoring activities such as educational and training programs of business and industry."

"The reluctance to change on the part of educators and school systems represents a paradoxical situation. Teaching and learning consists of trying to bring about behavior changes, and the purpose of education is to develop individuals who are adaptive and creative. Therefore, the effort of the professor and the major purpose of the educational enterprise is to bring about planned change in the individual." These are the words of Meierhenry (1966), who also lists some of the special problems of innovation in education. He says that in the educational field it is almost impossible for one individual to make a change without its having implications for other professional or lay persons. Another factor is the lack of performance standards in the field of education. "Education generally has not eagerly sought research results, and where such results are available, they are held in contempt by some educators or, at least there is disagreement as to whether the results achieved are desirable ones. Until there is some greater agreement as to what are the purposes of education, there will continue to be frustration in justifying changes because of the fluid or non-existent goals." (p. 463) Research shows that as soon as a new idea is introduced into an educational background, the institution becomes conservative

and resists further change. Furthermore, the greater the age of the institution the greater the reluctance to acceptance of new ideas. "The whole educational enterprise is highly institutionalized and therefore very reluctant to accept any type of change." Another problem of innovation in education is the fact the system itself - the educational institutions - is an extremely complex economic and political organism. Too many groups with different roles in the educational system and therefore interests, participate in the decisions taken that may only be important for one group. Another dimension that cuts across the whole school system is the various professional and learned societies to which groups of professors belong. Very often there are also marked differences of opinion among these groups as to what actually represents acceptable practices, and such situations lead to confusion and make change difficult to achieve.

The use of communication instruments and channels in a skillful way, is basic for the promotion of change. The methods of encoding the most effective message must be known, whether designed for informal or formal situations. Not only must the innovator understand theories of communication, but the practicalities of message design must be comprehended and practiced as well. There is a consensus that media can be particularly useful in sensitizing a group for change. "Skillfully developed media can postulate various models which, in turn, can suggest how changes might be introduced

into an ongoing enterprise. These models can help the individuals involved to conceptualize how the new practices being presented might be adapted to other situations." (Meierhenry, 1966, pp. 464-465). The media can serve, therefore, both to stimulate individuals to change and to slow the response which others have made to similar proposed changes.

Bates (1974) studied the success and failure in Innovation at the Open University. The problem resided in that faculties, by their nature as interest groups, cannot see the interests of the university as a whole. In order to have successful innovative program they--the faculties--must take some responsibility for its cost-effectiveness, and the consequence of its planning and policy making for its stated objectives.

According to Zeckhauser (1972), the most intransigent problems of educational technology are educational, not technological. Educational media do not come into the seventies with a flawless record. Many factors have prevented educational media from achieving their potential. The adoption of technological devices will no doubt increase in the future, and improved instruction will be the result. But the revolution heralded by technology's partisans is not imminent. Careful research and development efforts applied to both media and their application will be required before the reality can meet the promise. The promise Zeckhauser talks about relates to the fact that if properly used, there is little doubt that

the new media, serving as instruments of instruction, can make an important contribution to education. Perhaps the greatest asset of the media is their ability to facilitate high-quality instruction. The media can also enhance the possibilities for interaction between student and teacher. Prepared material can free faculty time to redirect to the provision of individual instruction, question and answer periods and discussion sections. Aside from these advantages that the use of audio-visual media has, there are also the portability features of the media, which makes learning more accessible. The media can serve diverse instructive functions. As the media enables a student to tailor his education to his own capacities and interests, his education becomes a more meaningful endeavour, and his motivation should rise accordingly. With the new call for relevance in the university, there is a desire to bring outsiders into the classroom. These non-academics may not be fully prepared in some of the more technical aspects of the subjects they teach. This is another role for the media.

Educational media are faced with a lot of problems; Zeckhaouser has a different (but complementary) outlook on these problems from Meierhenry. He talks about confusion of the hardware market. Hardware, according to him, leaves much to be desired. As approaches to educational methodology vary, it has been difficult for hardware manufacturers to develop an instrument which will be used universally by

educators. The inflexibility of the hardware has contributed to the under-utilization of media. Hardware has persistently been difficult to use. Much of the equipment is not designed for everyday use and unskilled users. Even the more simplified mechanisms face problems of jamming. Servicemen are not always available. There is inadequate support of software. Insufficient time, money and manpower have been put to the talk of developing good materials for projection. Because of commercial color television, high fidelity FM radio and intricate home stereo equipment, audiences, no matter what their age, are sensitive to quality. Aside from technical shortcomings, instructional ineffectiveness and content inadequacy were the grounds for unfitness. Poor planning and research, non-existent testing, no money and an inadequate understanding of the media's role, its potential or distinctive characteristics all contributed to this wrong conception of the media. Software is so often produced by teachers unfamiliar with the medium, sub-professional crews and low budgets that it is not surprising that poor quality has been the rule rather than the exception.

The educational system itself has not been overly responsible to the media or its untapped potential. Innovative practices are discussed at education conventions and in professional journals; seldom are they readily adopted. This unresponsiveness to media innovation (and not only to media)

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may be explained by both the inertia of the educational system and by the attitudinal bias of those within it. "The sluggishness of the educational system is a major obstacle to the introduction of technology. The new media do not fit easily into the traditional, circumscribed pattern of instruction. In addition the complexity, unreliability, and poor quality of the materials have given teachers few incentives to change their methods. Technology seems to cost them more time and effort than conventional instruction". (Zeckhaouser, 1972, p. 316).

Most experience has simply reinforced teacher attitudes. Many teachers see their status threatened by automation. They fear replacement or subordination to instructional machinery. In many cases, proper education for professors would rectify such misunderstandings. The integration of media into a traditional framework instead of the traditional framework's integration into a technological format must be emphasized. The allegiance of superintendents, principals, deans and department heads may have an impact on the success of educational technology. It has been found that administrative attitudes greatly affect those of the staff.

The impersonal character of media-based instruction remains a key issue facing educational technology. Personal communication is important to all aspects of the learning experience, and it is vital to some. The literature on audio-visual education is replete with discussions on how to adopt

media without dehumanizing the educational experience. There is little disagreement that media must take a complementary and a supplementary position to the professor. Feedback and participation are essential.

Much of the difficulty with educational media has to do with the field of education itself. Throughout the education system, objectives are nebulous. An adequate, general theory of learning has not yet been developed. Furthermore, there is not much theory relating specifically to educational technology, for this field is still young. It is essential to discover more about how equipment (books included), environment and the human factor blend into the learning experience. The different media need to be investigated. There is almost no research which would help decide when to use a given medium and when not to use it. Little professional cohesion has arisen in the field of educational technology. The media currently compromise a mixed group of discrete techniques and borrowed theories. As is characteristic of the early phase of any new development, each group tends, in general, to view the application of technology from the point of view of its own specialty.

One feels a certain sympathy for the classroom teacher in the current scene, especially in regard to his relationship to instructional media. On the other hand, the teacher faces a veritable deluge of learning resources, some excellent, some less than satisfactory. Generally, he is given only minimal assistance in making intelligent

selection from this mass material. Frequently he is surrounded by hardware which he is untrained to use. In other situations he may still be frustrated by the logistical problem of getting the materials he needs when he needs them.

"Many reasons might be advanced to explain the avoidance of media in teaching, however there is one fundamental - it is very bothersome to use media. Perhaps the easiest medium of communication for anyone to manage is speech. If learners are to benefit from the use of media in schools, services must be provided to both teachers and students which make media as convenient as speech". (Belland, 1975, p. 219).

Actually the problem really is not whether we shall use machines but how and when to use them. The extraordinarily rich array of materials such as films, filmships, radio and television programmes, recordings, computerized materials, overhead transparencies, and simulations and gamings will be used. That is a settled issue, growing at an incredible speed. All the possible means to help learners achieve their potential will be used. The problem lies in the fact of how to combine the effective use of technology with human beings.

CHAPTER II

BACKGROUND TO THE STUDY

During recent years, several researchers have investigated attitudes towards audio-visual instruction and the factors which influence those attitudes. Among earlier researchers of professor-attitudes towards educational media were Ramsey (1961) who developed a measure to assess attitudes regarding the uses of newer educational media. This study compared the attitudes of audio-visual personnel with the attitudes of instructional personnel toward the newer educational media. He found significant differences between the two groups, and suggested the need for procedures to bring about modification of attitudes and their measurement in the use of newer educational media. Brown (1965) tested the scale used by Ramsey with a large population of educational media institute participants and found it to be a suitable indicator of attitudes towards educational media.

AV Media as Threats to the Teachers

Dawson (1971) designed an attitude test and an interview guide. Emphasis in his survey was given to the findings obtained from his attitude scaling instrument, the Media Attitude Profile (MAP). He tried to measure attitudes toward the relationship between media and students; attitudes toward

FIGURE 1

Outline of Research on Factors Reviewed on the Literature Review

1. AV Media as Threats to the Teachers

   Dawson (1971)

   Tobias (1966, 1968, 1969)

   Stolurow (1962)

   Eichholtz and Rogers (1964)

   Handleman (1960)

2. Resistance to AV Media

   Colville, Evans and Smith (1965)

   Gillet (1973)

   Tickton (1971)

   Beckwith (1971)

   Diebold (1971)

   Trotter (1970)

3. General Reaction to Change

   Chu and Schramm (1967)

   King and Ripton (1968)

   Dubin (1969)

   CERI (1970)

   Ayerr (1972)

   Salmond (1974)

   Dodge and Others (1974)

4. Availability and Accessibility

Aquino (1970, 1971, 1974)

Knowlton and Hawer (1962, 1963)

Milles (1970)

Finch, Gustilo and Wiensteiner (1970)

Hall (1964)

Leader and Null (1974)

Hubbard (1960)

Beilke (1974)

5. Relationship between Availability and Other Factors

Finch, Gustilo and Wiensteiner (1972)

Tobias (1968)

National Education Association (1967)

Kelly (1960)

Torkelson (1965)

Eboch (1966)

Guba and Snyder (1964)

Godfrey (1965)

Batham (1963)

6. Other Factors Affecting the Use of AV Media

Kelly (1960)

Evans, Hopper and Littlejohn (1971, 1974)

Bellew (1960)

7. Course Design

Armsey and Dahl (1973)

Elkins, Gaby and Rabalais (1970)

Neidt and Sjogren (1968)

8. Vocational Training

Leader and Null (1974)

9. Sex, Level of Teaching and Years of Teaching Experience

Eicholz and Rogers (1964)

Bish (1968)

Young (1974)

Stephens (1971)

Grant (1970)

10. Use of AV Media

Chu and Schramm (1967)

Basse (1975)

McAdam (1969)

Donnelson(1970)

Beilke (1974)

Brown and McIntyre (1963)

11. Solving the Problem of Resistance to Change

Riehle (1968)

Wood (1969)

the increased future use of media in schools; attitudes toward media specialists; and attitudes toward the involvement of professional teacher organizations in the area of instructional media. He found that the majority of the population surveyed considered instructional media to be relatively low on the priority list of the professors. Among his findings, he discovered that instructional media, per se, were not regarded by the majority as "threatening" to professors. However, there was a concern about the role of the professor in decision-making and the possible loss of classroom autonomy for the professors if media were to be used extensively. "Fear of replacement" was regarded more as a potential, rather than as a real and immediate source of "fear" for the teacher. Lack of familiarity was considered to be an important factor which could contribute to professor anxieties in the area of instructional media.

Sigmund Tobias (1966, 1968, 1969) is one of the researchers that has dedicated a great amount of time to the study of attitudes of professors and reasons for the use and non-use of audio-visual media. One of his major findings is that both teacher and student have highly positive attitudes towards the tried and known devices such as books. Negative attitudes towards media were found to interfere with the achievement of the students and were transmitted to them as well, in this way affecting their achievement from such materials. Teachers had significantly more positive

attitudes towards terms describing traditional instructional devices (workbook, flash cards) than to those describing programmed media. He also found that significant differences existed between essentially synonymous terms differing only in the degree to which they connoted mechanization, or automation. The data strongly suggested that teachers were biased against terms implying automation and indicated the possibility that teachers viewed such media as threatening to their role. This is striking evidence of the frequently voiced concern that teachers see themselves as threatened by the introduction of some of the newer media (those connoting automation); it strongly supports the idea that some threat of replacement by the machine is involved. These studies also indicated that the negative attitudes and inferred fear of automation are not exclusively directed against programmed media labeled by automation terminology. The generally favorable attitudes expressed toward audio-visual terms and their perceived efficiency fell sharply once the term "tutor" was affixed. Clearly, fear of automation among teachers is easily attached to media other than those relating to programmed instruction once the name implies direct competition with the professor.

Stolurow (1962) also found some suggestive evidence that teachers in training viewed teaching machines as threatening to the teachers' role. An important caution regarding research in this field is made by Eichholtz and Rogers (1964).

They indicated that the real reasons for teachers' rejection of educational innovations are rarely given. It is thus pertinent to note that data based on teachers' reactions in the form of direct comments in this area may be less than accurate. One would expect that teachers, much like other groups confronted by the advent of automation, are likely to view with considerable unease any new equipment described in terms associated with replacement of human workers by machines. Nevertheless it would appear unlikely that teachers would state such a belief overtly, in view of its possible conflict with professional goals. One might expect, however, that given the opportunity to state both their findings towards such media and their views of the usefulness of these devices in comparative terms, teachers would systematically prefer equipment which poses less of a threat to their role.

Handleman (1960) made an attempt to clarify the attitudes of teachers toward teaching by television. Although experiments indicate that students learn by television, faculty acceptance is considered critical to the success of the medium in education. There were a number of attitude patterns that reflected specific areas of opposition on the part of the non-television professors to certain aspects of TV teaching. Among these were fear of standardized, mechanized education, fear of reduction of importance of the non-TV teacher, lack of teacher-student feedback, and a distrust of measuring instruments employed by researchers.

Resistance to Audio-Visual Media

Colville, Evans and Smith (1965) also found that there was great resistance to the use of instructional television in teaching institutions. They divided the resistance into two categories: 1) an apathy, or feeling of "irrelevancy" concerning ITV as an additional teaching device, or 2) an outright hostility and repudiation of ITV regardless of its applications. They are convinced that the specific attitudes of the educators, rooted in complex anxieties and suspicions have seriously jeopardized the growth of ITV in a number of important realms of education.

Through the influence of the media, the role of professor is changing significantly as the instructor gives way to the mediator of learning. According to Gillet (1973), the threat imposed by the media is not so much to teachers' jobs as to the nature of their work. Media have the potential to professionalize teaching. Both subjective opinion and empirical research find professors reluctant to the use of new media. Classroom teachers claim their failure to use modern media is not based on fear of inertia, but on disenchantment, inadequate preparations, and politics. Old materials and methods still have great validity.

According to the literature of instructional technology and the experience of both the users and producers of learning materials, teachers in the classroom tend to resist technology, especially and primarily television, for several reasons: the basic conservatism of the education establishment;

fear of the effects of instructional technology on their role and responsibilities; the ineptitude and insensitivity of the hardware people; and the minimal or nonexistent involvement of teachers at every stage of the process. In discussing the conservatism of the education establishment, Tickton (1971) identified five conditions which inhibit professor acceptance of innovation; ambiguity of the goals of education, making professors hesitant to experiment; misunderstanding or misinterpretation of new reforms; identification with the traditional system, isolation from other teachers; and a wide range in professor effectiveness and adaptability.

Another major reason for teacher resistance lies in their apprehension engendered by the things of learning. Teachers are hesitant to acquire new responsibility which they may not be professionally equipped to handle. They fear that devices provided by technology may be professor replacers instead of "teacher extenders" (Beckwith, 1971, p. 853). They worry they may lose what they regard as "the essence of professional being. The teacher fears competition from an inhuman, unbeatable adversary (Diebold, 1971, p. 30). With instructional technology, they envision invasion of their authority in the classroom (Diebold, 1971, p. 30) and the concomitant loss of autonomy and professional privacy, separation from the students (Trotter, 1970, p. 16) and subsequently, downgraded position, loss of recognition and prestige, and reduced rewards.

General Reaction to Change

Chu and Schramm (1967) comment on television specifically. They list some of its disadvantages, which are not the same as those for other teaching aids. Unfortunately, we see that many professors do not bother to look into the differences amongst the aids--they find it easier to generalize.

King and Ripton (1968) studied the effects of two innovations that were taken to a teacher college: television was introduced, and it was proposed to merge the college with a university. These results showed that television made a minimal impact, but the proposed merger produced a high stress reaction. Teachers felt threatened in their positions. It was evident that the reaction process paradigm provided a suitable model for understanding and documenting change as a process phenomenon in which the components of the process determine the impact of change on a social system.

Starting from the premise that ETV is a new medium of instruction rather than just another method, and attending to the research regarding the use of ETV and other media in colleges and universities, one can pose three main questions: 1) Can a distinction be made between the consequences of students being taught by ETV and the consequences achieved by other teaching technologies? 2) Is there a systematic way in which the attitudes of college professors relate to the possibility that they may have to use ETV in their teaching? and 3) Is there a special student reaction to being taught by ETV compared with their reaction to the instructional

technologies replaced by television instruction? Dubin (1969), in his book, gives some answers to these questions. He says that ETV is neither better nor worse intrinsically than the medium of instruction it may replace in achieving results among students, and that therefore does not require an educational policy decision. Teachers who are responsive to ETV will use it on an individual basis. ETV may tend to cause a redundancy in the teachers' teaching functions, but this may be compensated by a proportional growth in their research functions.

To quote from a recent international report (CERI, 1970, p. 11): "Education, although essentially a form of communication, has been the undertaking least affected in its mode of operation by recent developments. It is not surprising, therefore, that to the majority concerned with education, educational technology implies little more than gimmickry (and expensive at that)--a fringe activity peripheral to the real task of education. One reason for this attitude may be found in the promotional methods of some producers who oversell their equipment." The main factor, however, is the failure on the part of the educators to appreciate that new means of communication require a radical review of the teaching-learning process.

Ayerr (1972) studied teachers' attitudes toward instructional television and considers that negative attitudes towards this medium are not unusual. He is another researcher

that feels that negative attitudes are generated from fear of mechanization, fear of the non-instructional TV teacher becoming unimportant, lack of student feedback, and distrust of measuring instruments. He found among factors related to the use of instructional television, there are: the teaching process, threat of instructional TV, problems in the use of instructional TV, and the learning process. Teacher attitudes in his sample were found to be favourable toward this teaching aid.

The success of the media systems in learning situations are at least partially dependent upon the perceived positive or negative attitudes towards their use held by administrators and faculty. Salmond (1974), in an investigation of innovations in instructional media in institutions of higher education, found that faculty and administrators view electronic media as fast, important, but rigid.

Innovations in the classroom were also investigated by Dodge et al (1974). They found that teachers perceive innovations as something that intrudes upon the professor's control. Innovations are seen as counter-productive to the professor's needs because they help create disruptive student behaviour. Dodge and his team were interested in finding out how professors, given the availability of instructional resources, actually used them in their classes. Some of the findings, which will be mentioned here, are among some of the most interesting in this field. "The instructional value of a

medium of instruction does not necessarily lie within the medium itself, but rather in how it is perceived and acted upon by those who might use it and those who are the objects of its use. That is, what we might term successful use of a mediating device appears to be more a function of the people using it and the way they define it than any inherent quality of the device itself." (Dodge et al, 1974, p. 21). They found that the mechanical devices that could be used as media are frequently used in ways that are counter to instructional objectives.

Control over student behaviour was the dominant theme throughout their study, and though each teacher exhibited differences in the extent of control desired all indicated they disliked and resisted forces that might reduce their control or precipitate disruptive behaviour. In fact, one important criterion in the teacher's evaluation of a resource input from outside the system is: how does it affect the control that has been established in the classroom?

Any object-material or human that is perceived as having the potential for being distractive or disruptive of routine is negatively prejudged by the teacher as one more thing in the class to worry about. The presence of an item such as a piece of audio-visual equipment or a listening centre has meaning for a student (or anybody) and that meaning is not necessarily what the designer of the machine or the teacher may have for that machine, thus the student can do something with that object that lessens the control the teacher has

over the pupil, and may even work to propagate what is perceived by the teacher as disruptive behaviour. Most teachers observed had rules against touching equipment - even those devices designed for independent, individualized work - and enforcing these rules was one more element of control the professor had to worry about. Because of a perceived time problem, teachers were hesitant to take the time to integrate resources into ongoing instructional programs.

Instead, they tended to use these resources as frills - devices to break up the routine of the day. The way in which the teachers under observation typically employed resource inputs was to integrate them into their established routines, without noticeably changing their schedules and their styles. Teachers also sensed criticism of their approaches to teaching - even when that criticism was not communicated - and believed outsiders were critical of them only because these outsiders did not know what life in the classroom was really like. They did not want anyone to impose stage media, or, to that effect, change items that were not included by the teachers themselves in the teaching-learning process.

Availability and Accessibility

While a major implication of the literature is that teachers utilize educational media more readily when those media are available there is little evidence to indicate that increased utilization arising from availability of audio-

visual equipment and materials is linked with improved teacher attitudes toward such utilization.

One researcher who dedicated a great amount of time to looking at teachers' perceptions of the newer communications and educational media is Aquino (1970, 1971, 1974). He investigated professors who had taken an audio-visual education course and returned to teaching during the semester immediately following the course. He concluded that the sample of the professors' attitudes towards audio-visual instruction showed that they were not influenced by the amounts of audio-visual materials their schools owned or by the accessibility of those materials. Relationships were discovered for the factors involving availability and accessibility of educational media within teaching environments. Those relationships revealed the sample's concern for the subtle differences between the influence of "availability" and "accessibility" upon their attitudes toward audio-visual instruction. "Availability" implies proximity in time - the equipment is there when the user wants it. "Accessibility" implies proximity in space - the user does not have to go far to get the equipment.

Besides finding that the teachers who exhibited more favourable attitudes toward audio-visual instruction were also more inclined to be critical of the educational media environments within which they were employed, Aquino found that teachers who possess extremely positive attitudes

towards audio-visual instruction are apparently those who suffer the greater frustrations when their efforts to utilize educational media are rebuffed by operating conditions which do not provide audio-visual equipment and materials at the times they are required. These teachers presumably develop many plans which require the utilization of educational media thereby exposing themselves more frequently to disillusionment when they are not able to implement their plans. Conversely, those who are less favourably disposed toward educational media, probably use and plan for educational media presentations less often and do not feel as sharply the disappointment of not being able to bring their plans to fruition. Such persons would be less likely to notice faults within their audio-visual education teaching environments and would be more inclined to overlook defects which did attract their attention.

Knowlton and Hawer (1962, 1963) concluded that negative teacher attitudes toward educational media are related to utilization barriers and not to educational media as such; and that increased utilization of educational media by professors following their participation in an audio-visual education course is the result of improved information rather than improved attitudes.

Teacher perceptions of those environmental conditions inside schools which influence utilization of educational media were investigated by Milles (1970) who concluded that organized audio-visual programs supervised by audio-visual coordinators were related to significantly superior audio-visual educational climates. Finch, Gustilo and Wiensteiner (1970) reported findings indicating that availability of instructional resources leads to increased utilization of such media, but that teacher attitudes have little influence upon availability-use relationships.

Hall (1964) made a comparative study using the accessibility variable. He tried to determine which of two types of administrative organization of instructional materials centres provided the greater accessibility of instructional materials to classrooms.

Of the factors found important in achieving teacher utilization of the materials centre, the most crucial factor appears to be that of accessibility. Distance from the classroom to the materials centre affects the utilization of the centre. Teachers felt too, that inadequate time in the teaching day is provided for them to make full use of the materials centre.

The location of a school in relation to the audio-visual centre was not considered by Finch, Gustilo and Wiensteiner (1970), as being a major factor in teacher utilization of media.

These findings seem to conflict with those of Hall (1964), who found that distance from a centre was an important factor in the utilization of media. Whether a professor taught in a one, two or three story building apparently was not related to his or her use of films. Neither the expenditures per pupil for instruction nor the expenditures per pupil for library and audio-visual materials was related significantly to the number of films used per professor.

There is a considerable conflict in the literature concerning professor perception of the availability of audio-visual materials and their use. However, Leader and Null (1974) found a significant relationship between film use and professor perception of availability. Those persons who perceived that a number of films were available in their teaching area used significantly more films than did those individuals who did not. The communication to professors that audio-visual materials were available had a significant effect on the amount of utilization.

Hubbard (1960), found that some reasons for the limited use of audio-visual materials were: lack of classrooms with adequate facilities; difficulty in getting the right material when needed; lack of appropriate materials at college level; lack of adequate budgets to keep certain kinds of materials and equipment decentralized; and lack of information on audio-visual sources. Limited users emphasized that they lacked

on-the-job experience; that they had little or no formal audio-visual training; that materials in the field were inadequate; that special help was not readily available; and that the field of the individual teacher could not be "audio-visualized".

Beilke (1974) wanted to see if the teacher's' use of media was related to number of: sources consulted to obtain media, catalogs and persons contacted to acquire media, days waited to receive the media. She found that teachers contacted on the average more persons than catalogs to obtain media. Principals' and media specialists' estimates on the average of days teachers had to wait to receive the requested media were less than the reports of the teacher groups. Four categories of problems with media and use were identified: 1) Money; 2) Personnel assistance; 3) Inservice assistance; 4) Facility improvement.

Relationship between Availability and Other Factors

Finch, Gustilo and Weinsteiner in 1972 made the observation in their review of literature that in many cases, measures of attitudes towards specific resources were not obtained. Since they could not specify the extent to which attitudes may vary between one instructional resource and another, it is difficult to draw conclusions concerning specific attitude-availability-utilization relationships. Their objectives were to study the attitudes of teachers toward

specific classroom and non-classroom instructional resources and to examine interrelationships among teacher attitudes toward resources, resource utilization, and resource availability. Their results revealed that the professor group generally had most favourable attitudes toward those instructional resources which were of a more "traditional" nature. Attitude scores indicated that the more "progressive" instructional resources were favoured less by the teacher group.

The attitudes of professors toward resources, were parallel to the findings of Tobias (1968) which indicated that threat of automation may be of some importance to the attitudes which teachers have toward instructional resources. Instructional resources which saw the greatest amount of use were those which received greater use by the vocational-technical teacher (shop or laboratory equipment, shop or laboratory project, textbook, chalkboard). Those resources which saw the least use might be classified as newer media (computer assisted instruction, educational television, teaching machine, 8 mm motion picture projector). Teachers indicated that those resources which were most readily available consisted of the more traditional type. These findings tend to agree with results reported by the National Education Association (1967).

Results also indicated that relationships between attitude and use were generally positive and significant. These findings are parallel to those reported by Kelly (1960):

if a teacher has a positive attitude toward instructional resources, he will be more likely to use these resources. It seems that each particular resource which the teacher may have at his disposal must be examined individually relative to the professor attitude; then some determination may be made with regard to its eventual use. Resource availability and use related in a positive and significant manner for the resources which were examined. These results confirmed those previously found by Torkelson (1965) and Eboch (1966).

Generally, results suggest that the degree to which a resource is available for teacher use may provide some indication of the extent to which it will be used by the teacher. Guba and Snyder (1964) found users of media within their population who possess more favourable attitudes toward newer media than did non-users of those media. Increased utilization of audio-visual material was identified by Eboch (1966) as being related to increased availability of such materials. Godfrey (1965), reported upon availability of educational media in schools, and identified teacher requests as being among the more influential channels for having school authorities provide greater amounts of audio-visual equipment and materials. Batham (1963) found that teachers who perceived audio-visual materials as not being available are less likely to learn from their peers and emulate their behaviour with respect to modern media than are teachers who perceive the materials as being readily available.

He also found that teachers who held a high concept of their own performance with modern media are more likely to increase and improve their use of modern media than those teachers who have a low concept of their own performance with modern media. The teachers' perceptions of the availability of materials do not appear to be capable of generalization because of their tendency to think primarily in terms of specific materials and specific sources of materials.

Other Factors affecting the Use of Audio-Visual Media

Other factors affecting the use of Audio-visual media have been studied by many researchers.

Kelly (1960) made a review of available literature in the areas of definitions of attitude and attitude formation, measurement of attitude and teachers' attitudes towards audio-visual materials. Favourable attitudes on the part of the teachers he interviewed were significantly related to the encouragement by supervisors; frequency of the teachers' use of materials; ease of ordering materials; satisfactory previous experiences with audio-visual use; availability of equipment; fellow teachers' use of audio-visual materials; level of teaching of the teachers (lower grade teachers had more positive attitudes than teachers of higher levels in schools); college instructors' use of audio-visual materials; amount of materials available; proper physical arrangement of the classroom for use of audio-visual materials; sex (women have more positive

attitudes toward audio-visual materials than do men); condition of materials; training in the production of audio-visual materials; course work in audio-visual education; age (older teachers are more moderate in their attitude); and number of years of formal educational training. No relationship was observed between teachers' attitudes and number of years of teaching experience; equipment breakdown; presence of audio-visual director in the school system; subject matter field in which the teacher works; availability of funds for audio-visual education; and the mechanical ability of the teacher.

Subject Matter and Membership to a Particular Department

Evans, Hopper and Littlejohn (1971, 1974) investigated one particular teaching innovation - Programmed Instruction. They tried to find out how much information teachers had about various teaching aids including programmed instruction. They also wanted to see if they could determine their attitudes and the factors influencing these attitudes. They concluded that the variables that did not show a relationship that is statistically significant were age, rank of the teacher. Their evidence strongly supported the hypothesis that attitudes toward programmed instruction would be related to membership of a particular department.

Bellew (1960) found that professors in social studies, language, arts and science, were more prone to use audio-visual

materials than teachers in other subjects. In addition, another group of teachers tended to use a considerable number of films: home economics, industrial arts and agriculture teachers were treated as one group - vocational teachers - and their mean score was higher than the mean score of any other group of teachers with the exception of those in science and social studies.

Grant (1970) found more acceptors of educational media among teachers of English, foreign languages, science and history and social studies. More rejectors were found in professors related to math courses. He divided the reasons for use and non-use of audio-visual media into the external deterrent to the utilization of media and the personal characteristics of the acceptors (adoption and personality). The results of his study seem to emphasize the external factors, which, according to Grant, have a greater bearing upon the use or non-use of educational media.

Course Design

A substantial reason for teachers' resistance of the technology of instruction is that frequently they have been assigned a secondary role or no role at all in its planning and use. "Not only is the teacher ignored in the planning, curriculum, designing and decision-making, but

training in the use of the new media is either inadequate or non-existent". (Armsey & Dahl, 1973, p. 16).

Elkins, Gaby and Rabalais (1970), studied the uses of media in one school for one semester and he observed that some instructors made no use of the materials at all. While a number of conscientious instructors made casual, haphazard use of the materials, it was apparent that use was an appendage rather than as a deliberately designed part of their instructional system. At this stage, he concluded that the primary reason media was used at all was for media's sake - not for helping the students meet the course requirements.

The reason they made this study was that they believe in what they call the "multiple exposure principle", in which media, in its various forms, can immensely help in the learning process. This principle poses the hypothesis that in order for a student to master a specific body of knowledge, instruction must be designed so that he is exposed to the material a number of times so that he really retains it. The material could be facts, a concept, or a principle; it is new to the student and it is complicated. Instructional media is a very valuable aid, and the point Elkins, Gaby and Rabalais wanted to make is that professors have not learned to use media as aids and integrate them into the teaching process.

Neidt and Sjogren (1968) have the same point of view. In their study, results indicate that attitudes toward a

course are related to the methods of instruction used. A decline in attitudes toward a course can be expected over the time span of the course when only one method of instruction is used. Variation of instructional methods during a course (that includes audio-visual instruction) however, may serve to modify the attitude change curve. This is valid for both professors and students.

Vocational Training

Leader and Null (1974) reported in their study that those professors who had experienced in-service training programs on media, and professors who expressed a familiarity with the operation of audio-visual equipment, used significantly more films than professors who did not. Professors who believed that audio-visual materials were valuable in their instructional process and that they increased motivation for learning utilized more films. Professors who perceived that there was sufficient time in the instructional period for the use of audio-visual materials, tended to use them even more. Finally, professors with higher degrees of vocational training (Masters rather than Bachelors Degrees) used more films.

Sex, Level of Teaching and Years of Teaching Experience

Eichholz and Rogers in 1964, reported their findings that the attitudes of teachers that rejected media were not

related to the grade level at which a teacher taught, or to the number of years of teaching experience.

Bish (1968) examined the attitudes of a population of elementary and secondary teachers towards selected technological media of instruction. He found professors were generally positive toward all media used in the study. However, they were more positive toward traditional than toward innovative media. Of the several variables used in this study, "sex", "level of teaching" and "amount of use" seemed to have the greatest apparent relationship to attitudes toward the media. Two general combinations of media were identified, the components of which were perceived similarly by teachers. The first groups included movie, slide, overhead, and opaque projectors, as well as audio tape records and television; and the second group included teaching machines, programmed instruction manuals, video tape records and varieties of computer assisted instruction programmes.

Young (1974) also tried to determine the relationship between certain teacher factors and attitudes toward instructional media. The specific factors studied were sex, grades taught, subjects taught, educational background, years of experience, inservice education and college courses involving educational media. He also attempted to find out whether the situation was related to availability of equipment and materials, to time spent in the use of media; and to the

skills possessed in the use of the media. He did not establish, in general, any significant differences among the teachers he interviewed and their attitudes; and he stated that the ease with which teachers used media was closely related to the time spent in the use of the media.

Stephens (1971) studied media utilization in higher education. He emphasized the fact that "it should be recognized that educational media is not instructional technology, a misunderstanding difficult to dislodge from the minds of the uninitiated, but they are part of the tools of an effective instructional technology program", (p. 2). He found, among other factors, that professors with more experience tended to utilize media more. This should be expected, although the thought arises, those who have the more recent training should be more informed about media, should be more enthusiastic about its use. Evidently the factor of experience enables them to know more about media methods and their value to their teaching and to have more confidence to try them.

Faculty members that had higher attitudinal scores in his study, perceived more major and moderate deterrents. This indicates that recognizing deterrents does not usually influence the attitude of the faculty detrimentally toward the use of instructional technology and of course toward the use of media. The higher the attitudinal score toward the value of instructional technology the higher the media utilization

rate. The results of Stephens' study indicate that physical factors which pose deterrents to media utilization are not nearly so important as attitudinal factors.

Grant (1970) also studied the relationship between the teachers' attitudes to A.V. media and the years of teaching experience the professor had. He found that teachers with more teaching experience showed more negative attitudes toward new educational media. These findings greatly differ from Stephens' findings.

Use of Audio-Visual Media

In answer to the question "How effective is the new media proving to be? Wilbur Schramm and his group replied that: "Given a reasonably favourable situation, a pupil will learn from any medium - television, radio, programmed instruction, film, film strips, tape recordings, or others. This has been demonstrated by hundreds of experiments." (Schramm et al, 1967, p. 65).

Busse (1975) studied the rate of use of audio-visual media and found a significant relationship between the media competencies of teachers and the rate at which teachers utilize and value media in their instructional settings. Teachers rate themselves as having a high degree of competence in the areas of flannel-board utilization, cassette tape recorder operation, fieldtrip planning, overhead projector

utilization, poster preparation of ditto masters, 16 mm projector operation and utilization of tape records with listening centers. Areas of lowest levels included diazo transparency production, hook and loop presentation, slide copying procedures and copyright laws. Media items which were utilized at the greatest rate by professors were books, duplicated materials, flat pictures and games and simulations. Items of media used least often were microfilm, videotape, 8mm motion pictures and slides. Teachers valued duplicated materials, book displays, posters, filmstrips and 16 mm motion pictures as the most valuable instructional aids; while the lowest value was given to microfilm, pegboard, magnet boards, 8 mm motion pictures and reel to reel audiotape.

In a survey on educational media McAdam (1969) found that the teachers that formed his sample felt competent and properly used audio-visual materials, but they regretted the lack of up-to-date or appropriate materials. Motion pictures, overhead transparencies and programmed instruction materials were clear favorites when choices for new materials were offered. The survey also indicated that teachers do not seem to be fully aware of some of the newer media such as 8 mm film cartridges and videotapes. There might have been a greater preference for these newer materials than the results indicated if teachers had had an opportunity to become more familiar with them.

Donnelson (1970) found in his study that the only tool in nearly every classroom in Arizona English classes was a

bulletin board, although aids such as tape recorder and overhead projectors were available. He also found that very few teachers had taken undergraduate audio-visual courses as undergraduates; that they desired to learn more about the equipment they were already using; and that they seldom or never used media as a means of individualizing instruction. He found that relevant to a study of this nature was the teacher's relationship to the person in charge of audio-visual facilities, the teachers's acquaintance with the school's audio-visual facilities, types of professor-produced media materials and teacher opinion on the place of non-print media in classes.

Beilke (1974) found in her study that the four types of media that were most frequently used by all teachers were books, 16 mm films, magazines and filmstrips. In addition, science teachers made frequent use of transparencies and 8 mm films; whereas English and social studies professors made frequent use of recordings and newspapers.

Brown and McIntyre (1963) also tried to determine the extent of use of audio-visual materials by faculties, and identify specific sources of resistance to the use of these materials in college and university professors. They wanted to study and assemble information on audio-visual facilities and procedures which would be conducive to the improvement of college teaching and develop procedures for overcoming

barriers to optimum use of audio-visual materials. Their conclusions indicated that there was a tendency to associate the need for audio-visual materials with the problems of large class instruction. The widest use of materials was at the undergraduate level by professors with the highest rank and broadest teaching experience. The use of audio-visual procedures produced a significant positive change in attitude in an experimental group. They reommend that the use of audio-visual materials could be improved by providing for purchase or rental of materials, and internships for graduate students and seminars related to the use of media.

Solving the Problem of Resistance to Change

There is a need to find practical ways to overcome resistance from professors who are afraid of new educational practices and see any change as a threat to the old established patterns of teaching. Several researchers have tried to see how these problems can be solved. Riehll (1968) wanted to determine the effectiveness of an Audio-visual Education Demonstration (AVED), which consisted of a mobile, state-wide demonstration audio-visual centre and professional staff. The objectives of AVED were to give an in-depth audio-visual experience and to provide a demonstration of an exemplary audio-visual program. The researcher found that in general, school personnel showed a significant improvement in favourable-

ness of attitude toward audio-visual instruction after the AVED experience. The significant change was probably due to the presence of the AVED unit, the professional staff associated with the unit, the selection of material, the methodology of the operation of the project and/or the types of media and technology demonstrated by the AVED staff.

Demonstrating, teaching and helping professors get acquainted with audio-visual media or for that matter, any innovation proven to be one of the main roads to the improvement of professor attitudes. After a series of talks, demonstrations and workshops for teaching staffs, Wood (1969) met his objectives. Among them are five that can be considered of great importance.

1. To reach into the consciousness of a teaching staff and develop an easy familiarity with modern teaching aids and techniques.

2. To establish a living demonstration of effectiveness of using educationally sound media in harmony with traditional classroom practices.

3. To overcome widespread professor resistance to the use of instructional media that exists in almost every educational institution and thus serve as a model for other areas and institutions having the same problem.

4. To demonstrate dramatically to traditional professors that the use of technological aids (media) does not threaten to replace the professors, but in fact, releases the professors for activities and enhances their value.

5. To prove that extensive innovative programs with enrichment of media can be effected with a minimum of capital expenditure.

Many factors that affect teachers' attitudes toward the use of audio-visual media have been studied in the last fifteen years. Research has shown that one factor alone does not determine the attitudes of the professor, and that there are a number of circumstantial factors that also affect particular situations. In any specific context, it is important to make a survey to try to identify the main factors which affect both positive and negative attitudes of the teachers toward the use of audio-visual media. It is important to know these factors if some action to change a given situation is to be taken.

CHAPTER III

THE STUDY

Objectives of the Study

Central to this research is the theme that it is vital to organizers of in-service education in the area of instructional technology to have information regarding professors' attitudes toward knowledge of, and experience with instructional media. The interrelationships of these factors should prove useful in designing and organizing in-service experiences for specific populations of professors.

The main purpose of the study is to examine the pattern of usage of audio-visual equipment (who uses what). It is also concerned in identifying the reasons and attitudes which determine the use of the audio-visual equipment by the professors; specifically the extent to which the use or non-use of the equipment and materials is related to the following factors:

a) Subject matter taught by the professor.

b) Age

c) Sex

d) Years of teaching experience

e) Availability of equipment (assistance to professors with the software and the hardware).

f) Accessibility of equipment.

g) Awareness of equipment resources.

h) Professors' attitudes and factors in their creation (i.e. "threats" to job security, openness to change, perceived availability and accessibility).

A third objective is the discussion of possible solutions for the improvement of the utilization patterns of the audio-visual resources at the university by the professors.

Significance of the Study

The awareness of professors' attitudes and values is essential in initiating changes and/or improvements in educational institutions. Ellams (1969) concluded that teachers' attitudes to programmed instruction had a marked effect on students' activities. The same may be said of teachers' attitudes to all instructional media. He also held view that when those students become teachers they would transmit their inherited negative attitudes to their pupils. Ellams, as many of the researchers in this field, is aware of the importance of teachers' attitudes toward the new media, and of the problem arising through negative attitudes.

We see old models, old attitudes, old methods, old values being changed in society all around us. Can we expect the university, itself a social instrument, to escape unchallenged and unchanged? Obviously we cannot. It is an absolute necessity that the faculties' commitment to innovation be developed. "Any progress in curricular and instructional change is almost totally dependent on a faculty's devotion to academic improvement. In almost every department, there are prestigious senior members, as well as young

people, who believe that improvement of present procedures and methods is mandatory". (Dielich and Johnson, 1967, p. 206).

It is important to be aware of the educational situation in the educational institutions in order to take a definite action. The introduction of computers, systems analysis, and various new media into education has been heralded as a panacea for all the problems now facing our schools. The potential of new educational technology is indeed great, but much needs to be done before it can be realized. Retraining of present faculties and training of new teachers to use the material now available lags far behind. Therefore, any partial step toward the intelligent use of computer and other innovative devices should be based on an evaluation of the educational system and of the economics of computers, communications, and so on, as they are now. (Oettinger and Marks, 1969).

The importance of teachers' attitudes in the educational setting is expressed by Golob (1971). He says that the attitudes, values and beliefs of teachers in a given setting must be critically considered if we are attempting realistic educational change. Some commonality of educational purpose and perspective among the numbers of a teaching staff is essential in

their visualization of some common goals. Knowing the nature of these commonalities and differences is a necessary step in prescribing an approach to educational change. In his study he found that there was less than a majority agreement on any of the educational problems as being important or unimportant. Professors felt that they did not play a major role in solving the educational problems of their school. There is often no dialogue between teachers and those who make decisions about curriculum innovations in almost every educational setting. Too often educational materials developers, curriculum planners and educational administrators tend to overlook the role played by professors' attitudes to various educational resources that are designed to promote learning.

If we expect classroom teachers to make extensive and effective use of educational media, a concerted effort must be made to identify those teachers' competencies that relate to request and effective use of educational media.

Throughout the whole world, teachers are part of the entire educational system, and their attitudes to educational resources are instrumental in determining the success or failure of any educational practice.

This study should set a precedent for similar studies in a country in which so little has been done in this field. Not only should studies of this kind be carried out in different places and settings; but also further and deeper investigations should be prepared in order to be able to learn about the social, physical and other type of characteristics of professors and their attitudes to new, as well as old, teaching and learning practices.

HypotHesis

The following hypotheses were formulated to serve as guides to the stated objectives of this study.

1. The use of audio-visual media will not be equal among professors teaching in different faculties or departments.
2. More than 50% of the professors will not know that there is equipment and materials available for their use in the university.
3. There will be a difference in the use of audio-visual media between professors in the ages of 20 to 39, and those professors over that age range.
4. There will be a difference in the attitudes toward audio-visual media between professors in the ages of 20 to 39, and professors over that age range.
5. There will be a difference in the use of audio-visual media between professors with less than five years of teaching experience and professors with more than five years of teaching experience.
6. There will be a difference in the attitudes toward audio-visual media between professors with less than five years of teaching experience and professors with more than five years of teaching experience.

7. There will be a difference in the use of audio-visual media among male professors and female professors.
8. There will be a difference in the attitudes toward audio-visual media among male professors and female professors.
9. The use of audio-visual media will be affected by accessibility problems in the university.
10. The attitudes toward audio-visual media will be affected by availability problems in the university.
11. More than 50% of the professors will feel that audio-visual media presents a "threat" to the professors and destroys the normal face to face relationship between students and professors.

Definitions

The following terms are used throughout the study and require definition.

Innovation - This term refers to the "introduction of a novel factor, perceived as new by a given school and community, supported by a driving force, and implemented as a practical advance that deviates from established or traditional forms". (Unruh and Alexander, 1974, p. 24).

Diffusion - This term refers to the "process by which an innovation spreads. The diffusion process is the spread of a new idea from its source of invention or creation to its ultimate users or adopters. Thus diffusion entails the communication or dissemination of an idea, and culminates in its adoption by individuals". (Eicholz and Rogers, 1964, p. 308).

Educational Technology - This term refers to the development application and evaluation of systems, techniques and aids to improve the progress of human learning.

Awareness of Professors - This term refers to the professors' knowledge of the existence of the audio-visual equipment in the university. (This was measured by the questionnaire).

Operation of Equipment - This term refers to the skill the professors say (in the questionnaire) they have in operating audio-visual equipment.

Subject Matter - This term refers to the type of courses that the professors teach. These are divided into different categories following common academic practices.

Faculty - This term refers to the undergraduate programs or disciplines offered at the university.

Department - This term refers to the divisions made by the university in categorizing (for administrative purposes) the parts of the faculties.

Age - Of the professor refers to the chronological age in years counted from the time of birth.

Teaching Experience - This term refers to the number of years a professor has spent in classroom teaching at the university level since completing a formal or informal training and education in the teaching profession.

Attitude - Towards the use of audio-visual equipment refers to the negative or positive disposition of the professor towards the use of audio-visual media in his or her classroom as measured by Lickert type questions in the questionnaire.

Accessibility - (of equipment) refers to the distance between the buildings in the university and the audio-visual centre.

Audio-visual Media - This term refers to audio-visual equipment and materials. (Over-head projectors, 35 mm. slide transparencies, movie projectors, etc.)

Availability - (of equipment) refers to the physical presence of the equipment and materials at the time that they are needed by the professors.

Use of equipment - Use of equipment refers to frequency of use of audio-visual equipment and materials, by professors. Two measures of frequency are made: (1) Self report, through the survey and (2) actual bookings of equipment and materials, as recorded in the audio-visual centre log-book.

Research Population and Sample

The population at the time of the research, consisted of 874 professors that were teaching in the Universidad Ibero Americana in Mexico City. These included full-time, part-time and subject (professors teaching only one or two courses) professors. The sample consisted of 282 professors, chosen with the technique of stratified random sampling. This type of sample was chosen because it provides "greater precision in estimating population values. It requires prior knowledge of the characteristics of the population studied so that it can be divided into relatively homogenous subpopulations or strata". (Englehart, 1972, p. 309). Independent random samples were drawn for each stratum. The size of the samples drawn at random from each stratum was proportional to the numbers in each stratum of the population. The first thing that was considered were the departments of the university. Once all the faculties had been grouped into the Departments, the next step was to stratify each sample into sex, age, and years of teaching experience of the professors. That was the procedure undertaken to get a representative sample of the population. Frequency distributions can be seen in Appendix G.

Research Design

The method used for this study was a survey. It has the advantage of having a wide scope and giving accurate information within the sampling error. According to Kerlinger, this type of study deals with the incidence, distribution , and interrelations of sociological and psychological variables. A survey deals with how people feel or perceive and how they behave, in addition to things such as role and group status (Kerlinger, 1973 , p. 410).

The design of the survey method used for this study is called a cross-sectional design, which involves "the collection of data at one point in time for a random sample representing some given population at that time". (Wiersma, 1975, p. 147).

Research Procedure

The first important step was the construction of the questionnaire. The research project required two pilot studies before the major research was performed. Two small-scale models of the major study were carried out for the purpose of obtaining additional information by which the major study could be improved. These studies had the purpose of refining the measurement instrument - a questionnaire - and the data collection procedures.

The first questionnaire was done in English and tried out with 20 professors at Concordia University in Montreal, Canada. A few changes were then made to the questionnaire and a second one was constructed in Spanish. It was tried out at the Universidad Ibero Americana with 20 professors after choosing the sample. In order to eliminate the possibility of giving a questionnaire to a professor twice, the professors chosen in the sample of 282, were excluded from the pilot study. The second pilot study determined the procedures for data collection, and approach techniques as well as time and money calculations. It also served to verify the validity and reliability of the testing instrument according to the stated objectives of this study.

After receiving the letters of approval from the authorities of the university, 10 interviewers were given instructions on how the professors were to be located, identified and convinced to answer the questionnaire. Due to the problems found in the pilot study, it was decided that the questionnaire was to be filled by the professors at the moment the questionnaire was handed to them, without any specifications from the interviewers other than the introduction and the statement of the objectives of the questionnaire. It took the interviewers three months to gather all the questionnaires because the professors were hard to find,

reluctant to answer the questionnaire and wanted to keep it for days and even weeks before returning it to the interviewers. Procedures for data analysis were begun after the 282 questionnaires had been returned.

At the same time a record of the demand for audio-visual equipment at the university was being prepared. Specific instructions were given to the person in charge of the audio-visual centre and a record sheet elaborated for the purpose of this study had to be filled in by him every time any piece of equipment was demanded from the audio-visual centre.

Instrumentation and Data Analysis

The instrument used was a questionnaire (see appendix B). The first part was composed of 16 multiple-choice questions dealing with the sex of the professors, professional level, faculties they belong to, the time designated to teaching, courses they teach, years of teaching experience , age group, and specific questions on the use of audio-visual equipment and materials. The second part of the questionnaire dealt with the attitudes professors have towards the use of audio-visual media. This part was composed by a list of 20 attitudes in the form of Lickert-type questions.

The second part of the instrument is an attitudinal questionnaire based partly on the Media Attitude Profile (MAP) developed by Dawson in 1971. The MAP is a 57-item attitude test with items framed in a Lickert-type format. Each item provides opportunity for response variation along a bipolar continuum from "strongly agree" to "strongly disagree". The MAP was designed to measure attitudes towards various aspects of instructional media, principally in five content areas: attitudes toward the relationship between media and professors; media and students; future use of media in schools; attitudes toward media specialists and toward the involvement of professional professor-organizations in the area of instructional media. The 20 items chosen from the MAP for the objectives of this particular study belong mainly to the categories of attitudes toward the relationship between media and professors, and media and schools. The statements of the attitudes dealing with the availability and usage of audio-visual media were taken out of the Hamilton Innovation Profile (HIP) which is an 85 item rating profile developed by the project staff from the office of Educational Research in Colgate University (Hamilton, New York) in 1968. Its main objective is to measure the level to which a school had developed with respect to availability and usage of innovations. The items covered curricula,

technological and instructional innovations, and their organizational effectiveness.

It is important to note that the (MAP) method was also utilized by Handleman (1960), who made a comparative study of professors' attitudes toward teaching by closed-circuit T.V.; by Teather (1972) who measured student-professors' attitudes to an aspect of Educational Technology; by Young (1974), who made an analysis on professors' attitudes to instructional media; and by Aquino (1971) who measured professors' attitudes to audio-visual instruction and teaching environments of audio-visual instruction with the MAP.

The variable of accessibility was measured by the geographical distance from the classroom used to the audio-visual centre (see Appendix D). The variable availability was also measured by a record or "diary" filled in by the audio-visual centre during a period of time that covered the months of March, April and May of 1977 (see Appendix C).

Statistical data were gathered with frequency of use of the different items and their percentages, and chi square tests (cross-tabulations). A factor analysis was also used on the attitude questions because it provided a "statistical tool for

analysing scores on a large number of variables in order to determine whether there are a few identificable dimensions which can be used to describe the variables under analysis". (Popham and Sirotnik, 1973, p. 256). Once the factors were identified, it was possible to use a test to measure the single factors and their relationship with other variables. A point biserial correlation coefficient was utilized on the data provided by the factor analysis and other factors of the questionnaire because the variables under study were both continuous and dichotomous. The point biserial correlation is a product-moment type of correlation coefficient which is used to measure two different types of variables. A student's t-test was also used to determine the significance of the point biserial correlation.

Scope and Limitations of the Study

This study deals with the attitudes of the professors of the Universidad Ibero Americana, toward the use of audio-visual media in their classrooms. The results of this study are important for further considerations on the planning for;

a) Production of software for use in the university (slides, videotapes, etc.)

b) Future application of audio-visual media and equipment.

c) Possible changes and/or improvements in areas that show the necessary needs and potentials.

d) General perspective of the professors' feelings and actions in the area of audio-visual media.

1. One of the limitations of the study is that it represents no more than a preliminary study in the area. This means that if action is to be undertaken, further research on more detailed areas will have to be done. Nevertheless, it should provide an over-view on some factors affecting the use of audio-visual media.

2. Survey information ordinarily does not penetrate very deeply below the surface. Survey research is demanding of time, and sampling and development of schedules are major operations, many times hard to follow. "Any research that uses sampling

is subject to sampling error. There is always one chance in twenty or a hundred that an error more serious than might be caused by minor fluctuations of chance." (Kerlinger, 1973, p. 423).

3. Another disadvantage are the interviewers. It was hard to find competent interviewers even though they got the basic training for the interviews and instructions for the questionnaire surveys; the rejection to the interviewers was minimized by insisting and convincing most of the reluctant professors.
4. This research studies only the professors of one university in Mexico City, therefore, generalizations can only be made in the light of this datum, and relative to the characteristics of the sample population and the general situation in the institution.
5. The study covers, by means of a stratified random sample, a range of professors in the university. It covers all the faculties in general terms. If specific developments are to take place in the future, detailed research will be needed in respect of each specific faculty.
6. This study will be largely limited to the use of a questionnaire. Despite some of the inherent problems, the use of a questionnaire in the investigation is very important. The cost in money and

time would have been prohibitive if the collection of data was made by a lengthy personal interview.

7. An effort was made to obtain a fully representative sample of the population, and to assure the validity and reliability of the questionnaire through pilot testing. We are aware of the fact that specific measures were not made to assess the reliability and validity of the questionnaire. Nevertheless, part of the scales used in this study already had undergone reliability and validity assessment. The Office of Educational Research in Colgate University (New York) considers that the scale they produced is a satisfactorily valid and reliable scale for measuring the availability and usage. Hartley and Holt measured in 1971 professors' attitudes to new Educational Media and concluded that:

"It is questionable whether it is possible to produce a single scale which measures the attitudes of all the professors to all aspects of new educational media. It might have been preferable, but certainly more arduous to construct separable subscales for different media, and to standardize them on certain sections of the educational spectrum". (Hartley and Holt, 1971, p. 148).

8. A selective, rather than an exhaustive, review of the literature is made.

CHAPTER IV

THE SURVEY RESULTS

The results of the survey study will be reported in this chapter. The first part will be devoted to the statement of the results related directly to the hypotheses that were formulated as guides to achieve the stated objectives. Tets of significance where appropriate were generated through chi square tests, using the levels of significance of .05 and .01. Frequency distributions have also been used where necessary. The attitudes have been analysed by frequency distributions, in some cases with the chi square tests; and a factor analysis was used with the idea of concentrating some of the attitude statements into factors to locate a cause or influence which is in some measure responsible for a given phonomenon. In order to measure two different types of variables - continuous and dichotomous - a point biserial correlation was used to measure the relationship between two such types of yariables. A T-Test was used to measure the significance of the results gathered from the point biserial correlation.

Finally, the analysis of the records for the demand of audio-visual eqipment carried out at the audio-visual center during a three month period will also be reported in this chapter.

Tests of the Hypothesis

Hypothesis 1

> The use of audio-visual equipment will not be equal among professors teaching in different faculties or departments.

This hypothesis was supported. When cross-tabulation was made using the question that examined the different departments' use or non-use of audio-visual media, a null hypothesis was stated: that there will be no difference in the reported use of audio-visual media among professors teaching in the different departments of the university. This hypothesis was rejected at the .05 level of significance and accepted at the .01 level of significance (see Table 1).

TABLE 1

Ho. There will be no difference in the reported use of audio-visual media among professors teaching in the different departments of the university.

Dept's.	Science & Engineering	Humanities	Art	Centers	Human Sciences	Administration & Economics	Total
Reported Usage							
USE	54	7	31	5	41	27	165
NON-USE	29	7	9	3	24	15	87
NO RESP.	4	7	4	0	13	I	29
TOTAL	87	21	44	8	79	43	282

$X^2 = 28.99$ df = 15 $p=<.05$ $p=>.01$

The professors in the departments of Science & Engineering, Human Sciences, and Art were the ones who made more use of the audio-visual media (see appendix A to see what faculties contain which departments).

As can be seen in Table 2, the reported usage of the audio-visual media was highest in the subjects included under the categories of Engineering, Industrial Relations, Psychology, Physics and Chemistry. These findings support the ones in table one, and also support the hypothesis stating that there will be a difference in the use of audio-visual media among professors teaching different subjects.

TABLE 2

Ho. There will be no difference in the reported use of audio-visual media among teachers teaching different subjects.

REPORTED USAGE	YES	NO	NO RESPONSE
Subjects			
ENGINEERING, DRAWING AND DESIGN	39	5	1
PHYSICS AND CHEMISTRY	18	7	1
MATHEMATICS & STATISTICS	6	21	2
ENGINEERING THEORY	7	4	0
ARCHITECTURAL THEORY	16	4	0
NUTRITION	6	5	0
PHILOSOPHY AND RELIGION	5	1	2
HISTORY	4	3	0
LITERATURE	1	3	1
PSYCHOLGOY	21	8	2
SOCIOLOGY & DEVELOPMENT	6	5	3
LANGUAGES	3	0	0
LAW	11	9	8
ANTHROPOLOGY	1	1	0
COMMUNICATION	13	3	0
INDUSTRIAL RELATIONS	27	11	1
NO RESPONSE	0	1	8
TOTAL	184	91	29

$x^2 = 48.57$ df = 16 $p = < .05$
$p = < .01$

Analysis of Demand for Equipment

The most significant index of demand for the "technical services" at the audio-visual center is the cumulative totals of requests for equipment.

The results were recorded during a three month period (March, April and May, 1977) which consisted of 10 full weeks of classes. A special form was printed out for the objectives of the study and given to the authorities in charge of the audio-visual center. The form had to be filled out with information that included who was to make use of the equipment professor or student, faculty they belong to, what building was the class located in, and what equipment was being demanded. This had to be done each time a person demanded any piece of equipment (see Appendix C).

The results were divided into two parts, the demand for equipment by professors and by students. These can be seen in Appendix F.

The findings show that professors used the audio-visual equipment in 616 classes during a three month period (see Table 3). In order to see what the significance of this number is, a mathematical analysis was performed. Taking into consideration full-time, part-time and subject professors and an average of classes they teach during a week, the percentage of professors using AV media can be calculated

at 3.17. The results of the survey study reported that 58.51% of the professors in the sample used audio-visual media. Yet, in the actual analysis of the demand for equipment a much lower percentage was found. These results imply that the professors who say that they do use audio-visual media, use it at a ratio of only one class out of every 18 classes. This information only deals with the existing equipment at the audio-visual center, and does not include other sources of demand for equipment.

Furthermore, it was reported that the most audio-visual equipment was taken out by professors belonging to the departments of Science and Engineering, Art, Economics and Business Administration.

TABLE 3

Percentages of the demand* of Equipment at the Audio-Visual Center by Departments

MEASURED USAGE (No. of times)	TOTAL	PERCENTAGES
Departments		
SCIENCE & ENGINEERING	194	31.49
HUMANITIES	19	3.10
ART	158	25.64
HUMAN SCIENCES	65	10.55
ECONOMICS & BUSINESS ADMINISTRATION	142	23.05
TOTAL	616	100.00

*Demand = number of times the equipment was used during the 3 month period.

In Tables 1 and 2, the data on usage is based on self-reports, while the data in Table 3 is based on actual records of the equipment booking. However, in all cases, uses of audio-visual media were highest in the Science and Engineering and Art Departments.

A comparison was made between the actual use of equipment during a three month period and what the teachers reported in the questionnaire to be their use of the equipment. Tables 4 and 5 show the frequency distributions for the amount of times the equipment was used or reported used by the professors. Table 4 shows that the teachers reported to use more the 35 mm slide projectors, followed by the overhead and the opaque projectors in that order. Table 5 shows exactly the same results that were acquired by the analysis for demand of the equipment.

The results show that the most popular or rather, more used pieces of equipment at the university are the 35 mm slide projectors, the overhead projectors and the opaque projectors. These results have been verified in two different manners.

TABLE 4

Frequency distribution for Question 13
"Do you use any of these in your classes?"

EQUIPMENT	FREQUENCY	PERCENTAGES
35 MM. SLIDE PROJECTOR	128	29.7
OVERHEAD PROJECTOR	68	15.8
OPAQUE PROJECTOR	64	14.8
TAPE RECORDERS	58	13.6
16 MM. MOVIE PROJECTOR	35	8.1
SUPER 8 MM MOVIE PROJECTOR	35	8.1
FILM STRIP PROJECTOR	20	4.6
OTHER (SCREENS, BLACKBOARDS)	13	13.0
V.T.R. EQUIPMENT	10	2.3
TOTAL	431	100.00

TABLE 5

Frequency Distribution for the Demand of Equipment during a 3 month period.

EQUIPMENT	FREQUENCY	PERCENTAGES
35 MM SLIDE PROJECTOR	216	35.06
OVERHEAD PROJECTOR	124	20.12
OPAQUE PROJECTOR	109	17.69
16 MM MOVIE PROJECTOR	72	11.68
FILM STRIP PROJECTOR	67	10.87
SUPER 8 MM MOVIE PROJECTOR	16	2.59
SCREENS	11	1.78
8 MM MOVIE PROJECTOR	1	0.21
TOTAL	616	100.00

Hypothesis 2

More than 50% of the professors will not know that there is equipment and materials available for their use in the university.

This hypothesis was not supported. The professors were asked whether or not there was audio-visual equipment and materials for their use at the university. 58.2% of the professors answered that there was equipment at the university. From the rest of the sample 18.1% answered that there was no audio-visual equipment and 20.2% did not know whether there was audio-visual equipment or not (see Table 6).

TABLE 6

Frequency Distribution of Question 8
"Is there audio-visual equipment in the university for your use?"

	FREQUENCY	PERCENTAGE
YES	164	58.2
NO	51	18.1
I DO NOT KNOW	57	20.2
NO RESPONSE	10	3.5
TOTAL	282	100.0

M = 1.683 SD = .904 SD^2 = .817

In response to a similar question on the existence of audio-visual material, 42.2% of the professors in the sample answered that there was no material at the university. From the rest of the sample 29.1% answered that there was, and 24.8% did not know (see Table 7).

TABLE 7

Frequency Distribution of Question 9
"Is there audio-visual material in the university for your use?"

	FREQUENCY	PERCENTAGE
YES	82	29.1
NO	119	42.2
I DO NOT KNOW	70	24.8
NO RESPONSE	11	3.9
TOTAL	282	100.0

$M = 2.021$ $SD = .821$ $SD^2 = .673$

With these results we could assume that a majority of the professors did know about the existence of audio-visual equipment; and that a majority did not know about the existence of audio-visual materials.

In order to check the accuracy of these answers, a cross-tabulation was made between the questions that asked of the existence of both, for materials and equipment and the listing of the material and equipment made by the respondents.

A chi square showed that there is a difference between the knowing of the existence of the audio-visual equipment and material, and the actual listing of it (see Tables 8 and 9).

TABLE 8

Ho. The use of audio-visual media is not influenced by the knowledge of the existence of audio-visual material.

KNOWLEDGE	YES	NO	I DO NOT KNOW	NO RESP.	TOTAL
Reported Usage					
USE	71	77	17	0	165
NON-USE	8	39	40	0	87
NO RESPONSE	3	4	14	9	30
	82	120	71	9	282

$X^2 = 290.92$ df = 12 p = <.05 p = <.01

TABLE 9

Ho. The use of audio-visual media is not influenced by the knowledge of the existence of audio-visual equipment.

KNOWLEDGE	YES	NO	I DO NOT KNOW	NO RESP.	TOTAL
Reported Usage					
USE	136	17	12	0	165
NON-USE	25	29	33	0	87
NO RESPONSE	4	5	12	9	30
	165	51	57	9	282

$X^2 = 451.86$ df = 12 p = <.05 p = <.01

Results show that the use of audio-visual media was related to the knowledge the professor had of the existence of material and equipment at the university. From a total of 87 professors that do not use audio-visual media, 28.7% answer that there is equipment available at the university, while 33.3% state that there is no equipment and 37.9% do not know whether there is equipment in existence at the university. This shows that from the professors that do not use audio-visual media, 71.2% do not know of the existence of the equipment at the university.

It is very interesting to note the response to the attitude that deals with professors having a good knowledge of the existence of equipment and material at the university. A total of 63.5% of the professors do not feel that professors in university have a good knowledge of the existing material and equipment; while only 3.9% felt there was a good knowledge and 25.9% remained neutral (see frequencies for attitude 16 in Appendix G).

Hypothesis 3

> There will be a difference in the use of audio-visual equipment between professors in the ages of 20 to 39, and those professors over that age range.

This hypothesis was not supported. A chi square showed that there is no difference in the use of audio-visual media between professors in the age range of 20 to 39 and the professors over that age range, at both levels of significance (.05 and .01). Results are shown in Table 10.

TABLE 10

Ho. There will be no difference in the use of audio-visual media between professors younger than 39 and older than 40.

REPORTED USAGE	USE	NON-USE	NO RESP.	TOTAL
Age				
LESS THAN 39 YEARS	128	67	15	210
MORE THAN 40 YEARS	36	20	13	69
NO RESPONSE	2	0	1	3
	166	87	29	282

$x^2 = 11.80$ df = 6 $p = \leq .05$ $p = < .01$

Hypothesis 4.

There will be a difference in the attitude toward audio-visual media between professors in the ages of 20 to 39, and professors over that age range.

This hypothesis was not supported. A cross-tabulation was made between responses to the attitude that the audio-visual media have the capability of improving instruction and the age range of the professors. A chi square showed that the age of the professors does not influence the attitudes they have towards the audio-visual media (see Table 11).

TABLE 11

Ho. The age of the professors does not influence the attitude they have of the capacity to improve instruction with audio-visual media.

"The AV media have the capability of greatly improving instruction."

AV IMPROVEMENTS	AGREE COMPLETELY	AGREE	NEUTRAL	DISAGREE	DISAGREE COMPLETELY	TOTAL
Experience						
LESS THAN 39 YEARS	87	95	17	5	6	210
MORE THAN 40 YEARS	27	26	6	3	7	69
NO RESPONSE	1	1	0	0	1	3
	115	122	23	8	14	282

$x^2 = 16.65$ df = 10 $p = >.05$ $p = >.01$

Another cross-tabulation was made with the age of the professors and the attitude about the value of the audio-visual media. The null hypothesis that the age of the professors does not influence the value that is given to the audio-visual media is rejected at the .05 level of significance, but accepted at the .01 level (Table 12).

TABLE 12

Ho. The age of the professors does not influence the value that is given to the audio-visual media.

"Professors seem to be doubtful about the value of audio-visual media for instruction."

AV VALUES	AGREE COMPLETE-LY	AGREE	NEUTRAL	DISAGREE	DISAGREE COMPLETE-LY	NO RESP.	TOTAL
Age							
LESS THAN 39 YEARS	5	14	16	116	55	7	211
MORE THAN 40 YEARS	3	9	4	26	19	8	69
NO RESPONSE	0	0	0	1	0	1	2
	8	23	20	141	74	16	282

$X^2 = 21.40$ df = 12 $p = <.05$ $p = >.01$

Results show that the value given of the audio-visual media is independent of the age range of the professors.

Hypothesis 5

There will be a difference in the use of audio-visual equipment between professors with less than five years of teaching experience and professors with more than five years of teaching experience.

As can be seen in Table 13, this hypothesis was not supported. A null hypothesis was formulated, which stated that the use of audio-visual media is not influence by the

years of teaching experience a professor has. A chi square demonstrated that there was no significant difference, and the null hypothesis was accepted.

TABLE 13

Ho. The use of audio-visual media is not influenced by the years of teaching experience.

REPORTED USAGE	USE	NON-USE	NO RESPONSE	TOTAL
Experience				
LESS THAN FIVE YEARS	118	57	19	194
MORE THAN FIVE YEARS	48	30	9	87
NO RESPONSE	0	0	1	1
	166	87	29	282

$X^2 = 11.99$ $df = 6$ $p = \rangle .05$ $p = \rangle .01$

Hypothesis 6

There will be a difference in the attitude toward audio-visual media between professors with less than five years of teaching experience and professors with more than five years of teaching experience.

This hypothesis was supported. A cross-tabulation was made with the years of teaching experience and the attitude that the audio-visual media have the capability of improving instruction. A chi square showed that there is a significant difference between professors with less than

five years of teaching experience and professors with more than five years of teaching experience (see Table 14).

TABLE 14

Ho. The years of teaching experience do not influence the attitude that the audio-visual media have the capacity to improve the instruction.

"The AV media have the capability of greatly improving instruction."

AV IMPROVEMENT	AGREE COMPLETELY	AGREE	NEUTRAL	DISAGREE	DISAGREE COMPLETELY	TOTAL
Experience						
LESS THAN FIVE YEARS	76	93	17	4	4	194
MORE THAN FIVE YEARS	39	29	6	4	9	87
NO RESPONSE	0	0	0	0	1	1
	115	122	23	8	14	282

$x^2 = 34.6$ df = 10 $p = <.05$ $p = <.01$

Another cross-tabulation was made with the years of teaching experience and the attitude that the value of the audio-visual media is doubtful. It showed that the value given to the audio-visual media is affected by the years of teaching experience of the professors (see Table 15).

TABLE 15

Ho. The years of teaching experience do not influence the attitude that the value of the newer media is doubtful.

"Professors seem to be doubtful about the value of AV media for instruction."

VALUE OF AV MEDIA	AGREE COMPLETELY	AGREE	NEUTRAL	DISAGREE	DISAGREE COMPLETELY	NO RESP.	TOTAL
Experience							
LESS THAN FIVE YEARS	7	15	13	107	46	6	194
MORE THAN FIVE YEARS	1	8	7	34	28	9	87
NO RESPONSE	0	0	0	0	0	1	1
	8	23	20	141	74	16	282

$X^2 = 32.6$ df = 12 $\frac{p = .05}{p = .01}$

It is interesting to see that the attitudes toward the use of audio-visual media are affected by the years of teaching experience while the actual use of the media is not affected by the years of teaching experience.

Hypothesis 7

There will be a difference in the use of audio-visual equipment between male professors and female professors.

This hypothesis was not supported. Sex does not influence the use of audio-visual media at the university.

This is shown in Table 16. A chi square shows that the variable sex had no influence on the use or non-use of the audio-visual media.

TABLE 16

Ho. The difference in sex will not have any influence in the use of audio-visual media.

REPORTED USAGE	USE	NON-USE	NO RESPONSE	TOTAL
Sex				
MALE	129	68	24	221
FEMALE	37	19	5	61
	166	87	29	282

$x^2 = .6691$ df = 3 $p => .05$
$p => .01$

Furthermore, two other cross-tabulations were done with the variable sex and the knowledge of the existence of audio-visual materials and equipment. The results showed that the difference in knowledge of existing material does not have any relation to sex (Table 17).

TABLE 17

Ho. The difference in sex will not have any influence in the knowledge of existing material.

AV KNOWLEDGE	YES	NO	I DO NOT KNOW	NO RESPONSE	TOTAL
Sex					
MALE	63	96	53	9	221
FEMALE	21	23	17	0	61
	84	119	70	9	282

$x^2 = 4.46$ df = 4 $p => .05$
$p => .01$

Table 18 shows that the difference in knowledge of existing equipment does not have any relation to sex either.

TABLE 18

Ho. The difference in sex will not have any influence in the knowledge of existing equipment.

AV KNOWLEDGE	YES	NO	I DO NOT KNOW	NO RESPONSE	TOTAL
Sex					
MALE	129	39	44	9	221
FEMALE	36	12	13	0	61
	165	51	57	9	282

$X^2 = 2.92$ df = 4 $p =< .05$ $p =< .01$

Hypothesis 8

There will be a difference in the attitudes toward audio-visual media among male professors and female professors.

This hypothesis was not supported. Again we see that valuation of audio-visual media is not affected by the professors being females or males. The results of a cross-tabulation made between the variable sex, and the attitude that deals with the value given to the media, show that there is no significant difference in the attitudes shown by men professors, and women professors (Table 19).

TABLE 19

Ho. The sex of the professors does not influence the value that is given to the aduio-visual media.

"Professors seem to be doubtful about the value of AV media for instruction."

AV VALUE	AGREE COMPLETELY	AGREE	NEUTRAL	DISAGREE	DISAGREE COMPLETELY	NO RESP.	TOTAL
Sex							
MALE	8	19	17	101	61	15	221
FEMALE	0	4	3	40	13	1	61
	8	23	20	141	74	16	282

$x^2 = 9.70$ df = 6 $p \geq .05$
$p \geq .01$

The same thing can be seen in Table 20 where the variable sex was cross-tabulated with the attitude that the audio-visual media have the capability of improving instruction. Once more, we accept the null hypothesis and may state that this attitude toward audio-visual media is not determined by the sex of the professors.

TABLE 20

Ho. The sex of the professors does not influence the attitude they have as to the capacity to improve instruction of the audio-visual media.

"The AV media have the capability of greatly improving instruction."

AV CAPACITY	AGREE COMPLETELY	AGREE	NEUTRAL	DISAGREE	DISAGREE COMPLETELY	TOTAL
Sex						
MALE	91	89	20	8	13	221
FEMALE	24	33	3	0	1	61
	115	122	23	8	14	282

$x^2 = 7.35$ df = 5 $p \geq .05$
$p \geq .01$

Hypothesis 9

The use of audio-visual media will be affected by accessibility problems in the university.

This hypothesis is not supported, as is shown in different ways. A cross-tabulation was made between the use of the aduio-visual media and the building layout of the university. A chi square shows that there is no difference in the use of audio-visual media between professors teaching in difference locations of the university (Table 21).

TABLE 21

Ho. There will be no difference in the use of audio-visual media between teachers teaching in difference locations of the university.

REPORTED USE	YES	NO	NO RESPONSE
Buildings			
A	44	17	11
B	30	18	3
C	17	14	3
D	18	11	1
E	18	7	0
LABORATORIES	53	14	2
NO RESPONSE	25	16	11
TOTAL	205	97	31

$X^2 = 8.97$ df = 6 $p = > .05$ $p = > .01$

In the actual measurement during a three month period, the results showed that the highest use of audio-visual media had taken place in Building A (see appendix D for university layout), which is the farthest from the audio-visual center, located in Building E. From the times any type of equipment was taken from the audio-visual center, a percentage of 26.78 went to classrooms in Building A and only 19.15% stayed in Building E (see Table 22).

TABLE 22

Distributions of the classes imparted in different locations of the university.

NO. OF USERS	TOTALS	PERCENTAGES
Buildings		
A	165	26.78
B	95	15.42
C	113	18.34
D	74	12.01
E	118	19.15
LABORATORIES	43	7.00
NO RESPONSE	8	1.30
TOTAL	616	100.00

Furthermore, by taking advantage of the information provided by the questionnaire, two other cross-tabulations were performed between the use of the audio-visual media and

and the place where the professors got the equipment and materials. Results show that the professors that use the audio-visual media favour certain sources of the equipment and the materials. Table 23 shows that more of the professors use their own audio-visual materials when they teach; and Table 24 shows that most of the users use the equipment available in the university. A list of the difference sources for getting materials and equipment mentioned by the professors is shown in Appendix G.

Table 23 also shows that professors use their own materials more than materials from other sources; and Table 24 shows that most of the professors use the equipment in the audio-visual 110 center rather than providing it from other sources.

TABLE 23

Ho. The use of audio-visual media will not be influenced by the place where the professors get the material.

SOURCES	LIBRARY (SLIDES)	FACULTY	OWN	STUD-ENTS	EMBAS-SIES	OTHER	SEVERAL	NO RESP.	TOTAL
Reported Usage									
USE	2	14	77	11	2	8	47	5	166
NON-USE	0	0	0	0	0	0	2	85	87
NO RESPONSE	0	0	0	0	0	0	0	29	29
	2	14	77	11	2	8	29	119	282

$X^2 = 536.3$ df = 24 $p =< .05$ $p =< .01$

TABLE 24

Ho. The use of audio-visual media will not be influenced by the place where the professors get the equipment.

SOURCES	AUDIO-VISUAL CENTER	FACULTY	OWN	STUDENTS	OTHER	SEVERAL	NO RESP.	TOTAL
Reported Usage								
USE	86	18	14	4	3	40	1	166
NON-USE	1	0	0	0	0	1	85	87
NO RESPONSE	0	0	0	0	0	0	29	29
	87	18	14	4	3	41	115	282

$X^2 = 551.8$ df - 21 $p = \leq .05$ $p = \leq .01$

Hypothesis 10

The attitudes toward audio-visual media will be affected by availability problems in the university.

This hypothesis is supported. A cross-tabulation was formed by the use and non-use of audio-visual media and the attitude that there are problems in getting the audio-visual equipment at the university (see Table 25). The results show that 35.5% of the professors agree in that there are problems in getting the audio-visual equipment at the university. 188% disagree and 36.2% are neutral or do not know. The null hypothesis that the availability of the audio-visual media does not influence the use of the media was rejected.

TABLE 25

Ho. The use or non-use of audio-visual equipment will not be influenced by availability problems in the university.

"There are too many problems in getting audio-visual media in the university."

AV AVAILABILITY	AGREE	NEUTRAL	DISAGREE	NO RESPONSE	TOTAL
Reported Usage					
USE	82	43	37	4	166
NON-USE	17	47	13	10	87
NO RESPONSE	2	12	3	12	29
	101	102	53	26	282

$X^2 = 360.3$ df = 12 $p =< .05$ $p =< .01$

other cross-tabulations were performed between the knowledge of existence of material (see Table 26) and equipment (see Table 27), and the attitude stating that there are availability problems at the university.

TABLE 26

Ho. The attitudes toward the availability of audio-visual equipment at the university are not affected by the knowledge of the existence of the equipment.

"There are too many problems in getting audio-visual media in the university."

AV KNOWLEDGE (EQUIP.)	YES	NO	DO NOT KNOW	NO RESPONSE	TOTAL
AV Availability					
AGREE COMPLETELY	6	14	2	0	22
AGREE	28	42	9	0	79
NEUTRAL	18	34	50	0	102
DISAGREE	25	17	4	0	46
DISAGREE COMPLETELY	4	3	0	0	7
NO RESPONSE	3	9	5	9	26
	84	119	70	9	282

$x^2 = 297.8$ df = 24 $p = < .05$ $p = < .01$

TABLE 27

Ho. The attitudes toward the availability of audio-visual material at the university are not affected by the knowledge of the existence of the materials.

"There are too many problems in getting audio-visual media in the university."

AV KNOWLEDGE (MAT.)	YES	NO	DO NOT KNOW	NO RESPONSE	TOTAL
AV Availability					
AGREE COMPLETELY	16	6	0	0	22
AGREE	58	14	7	0	79
NEUTRAL	44	15	43	0	102
DISAGREE	39	6	1	0	46
DISAGREE COMPLETELY	5	1	1	0	7
NO RESPONSE	3	9	5	9	26
	165	51	57	9	282

$x^2 = 441.5$ df = 24 $p = < .05$
$p = < .01$

Most of the professors that said that they knew about the existence of the audio-visual equipment and material were not able to list the audio-visual media that the university had.

Two cross-tabulations were performed between the use and non-uses of audio-visual media and the knowledge of the existence of audio-visual materials and equipment (see Tables 28 and 29).

TABLE 28

Ho. People knowing of the existence of audio-visual material will be able to make a list of the available material in the university.

AV KNOWLEDGE	YES	NO	DO NOT KNOW	NO RESPONSE
Material Listed				
35 MM SLIDES	62	9	2	0
TRANSPARENCIES	6	2	0	0
FILMS	13	1	0	0
FILM STRIPS	4	0	0	0
TAPES	11	0	1	0
MAGAZINES	1	1	4	0
BOOKS	4	1	2	0
SCALE MODELS	2	0	1	0
GRAPHICS	1	0	1	0
DO NOT KNOW	7	11	48	0
THERE IS NONE	3	78	5	0
NO RESPONSE	1	11	9	9
OTHERS	4	11	0	0
TOTAL	119	125	73	9

$x^2 = 331.87$ df = 24 $p = < .05$
$p = < .01$

TABLE 29

Ho. People knowing of the existence of audio-visual equipment will be able to make a list of the available equipment in the university.

AV KNOWLEDGE	YES	NO	DO NOT KNOW	NO RESPONSE
Equipment listed				
OPAQUE PROJECTOR	82	5	0	0
OVERHEAD PROJECTOR	67	3	0	0
SUPER 8 MM PROJECTOR	15	1	0	0
16 MM PROJECTOR	11	1	0	0
35 MM SLIDE PROJECTOR	113	6	0	0
FILM STRIPS	7	1	0	0
TAPE RECORDERS	23	5	0	0
V.T. EQUIPMENT	15	1	0	0
OTHERS (LABS., SCREENS, ETC.)	22	0	0	0
MOVIE PROJECTOR	46	5	2	0
PROJECTORS	16	1	3	0
DO NOT KNOW	1	10	46	0
THERE IS NO EQUIPMENT	1	26	0	0
NO RESPONSE	2	1	4	9
TOTAL	421	66	56	9

$X^2 = 804.12$ df = 13 $p =< .05$ $p =< .01$

Hypothesis 11

More than 50% of the professors will feel that audio-visual media presents a "threat" to the professors and destroys the normal face-to-face relationship between students and professors.

This hypothesis is not supported. The results for the attitudes that deal with "threat" and "destroying of the relationship between professors and students" show that

professors do not seem to have a fear of the audio-visual media as predicted (see frequencies for attitudes 10, 13, 17, 18, 19 in Appendix G). A total of 64.9% of the professors do not feel that the audio-visual media reduces the professor-student relationship. A total of 68.8% do not feel that the media will take over these teaching jobs. A total of 72.7% do not feel that the media depersonalizes instruction. A total of 74.5% do not feel that audio-visual media only entertains students. A total of 78.7% do not feel that professors lose their importance in the class when using audio-visual media.

Factor Analysis

A factor analysis was used basically to know which were the most important variables of the study. It is important to notice that the questionnaire consists of two types of variables -- nominal variables and continuous variables.

Having considered the characteristics of the variables, the decision was taken to run only the attitudes with the factor analysis. The varimax was used with the aid of the SPSS statistical package. The factor analysis provides us with information on the measures that belong together -- which ones virtually measure the same thing, in other words, and how much they do so. It thus reduces the number of variables with which the scientist must cope (Kerlinger, 1973, p. 659).

The results of this factor analysis indicated three factors:

1. The first (and most important) factor was formed by variables that indicate the negative attitudes towards the audio-visual media; these were:

attitude 2 Audio-visual equipment is hard to operate.

attitude 10 The audio-visual media tends to undermine the professors' relationship with the students.

attitude 11 Audio-visual media makes learning too superficial.

attitude 13 Instructional media reduces the number of jobs.

attitude 17 The audio-visual media depersonalizes instruction.

attitude 18 Professors are just entertaining when using audio-visual media.

attitude 19 The professors lose some of their importance in the classroom when using audio-visual media.

attitude 20 Professors seem to be doubtful about the value of audio-visual media for instruction.

2. The second factor was formed by variables that indicate the positive attitudes towards the audio-visual media; these were:

attitude 1 The audio-visual media has the capability of greatly improving instruction.

attitude 4 Recent technological advances will enhance the professors's role in the classroom.

attitude 6 Wider use of audio-visual media is required at the university.

attitude 7 Students retain longer the material that has been visually presented to them.

attitude 9 All professors should take a course in audio-visual media, as part of their professional training.

attitude 12 Instructional media shows great possibilities for stimulating professor creativity.

attitude 15 The university needs an audio-visual coordinator.

3. The third factor was formed by only two variables that indicate the concerns for the way the university is equipped with audio-visual media.

attitude 5 The university is adequately equipped with media at present.

attitude 8 The professors do not need to work harder than necessary because the classrooms are well equipped with audio-visual media.

The other three variables that did not fit in any of the factors were:

attitude 3 Compared to other ways of teaching, the use of audio-visual materials requires too much work.

attitude 14 There are too many problems in getting audio-visual media in the university.

attitude 16 The professors have a good knowledge concerning the existing materials and equipment at the university.

The observed results showed that the negative attitudes came out to be of greater importance than the positive attitudes.

The factor scores, which are the contribution of each variable to form a factor, were taken into consideration to try to test some of the hypotheses of this study. This was done with the method of point biserial correlation. An analysis was made with the variables and the two main factors gathered from the factor analysis.

Given that the variables of sex, use and non-use of audio-visual media, years of teaching experience and age, cannot be manipulated with a Pearson Correlation, the point biserial was used. A T Test (two tailed) was used to test the significance of the correlation.

Results

1. Correlation between the main factor and the use and non-use of audio visual media.

r = .113548 t = 1.8070
df = 250 p =< .05

There is a correlation between the use and non-use of audio-visual media and the factors of the attitudes. We reject the null hypothesis which states that there is no correlation between the attitudes and the use of audio-visual media.

2. Correlation between use and non-use of audio-visual media and the years of teaching experience.

r = .06 t = .981
df = 250 p =>.05

There is no correlation between the years of teaching experience and the use or non-use of audio-visual media.

3. Correlation between age and use or non-use of audio-visual media.

r = .00041 t = .007
df = 250 p =>.05

There is no correlation between the ages of the professors and the use or non-use of audio-visual media.

4. Correlation between the sex of the professors and the factors of the attitudes.

r = .01931 t = .32323
df = 280 p =>.05

There is no correlation between the attitudes of the professors and them being males or females.

5. Correlation between the age of the professors and the factors.

$r = .07$ $t = 1.21$
$df = 282$ $p = > .05$

There is no correlation between the attitudes of the professors and their age.

Additional Results

The following information relates to questions in the survey which sought data not required specifically for the stated hypotheses.

A null hypothesis was formulated relating to the amount of time (hours) dedicated to teaching and the use of audio-visual media. The null hypothesis, stating that the amount of time dedicated to teaching at the university will not influence the use of audio-visual media, was accepted with a chi square (see Table 30).

TABLE 30

Ho. The amount of time teaching in the university will not influence the use of audio-visual media.

	USE	NON-USE	NO RESPONSE	TOTAL
FULL TIME	46	18	10	74
PART TIME	16	6	1	23
SUBJECT	101	62	18	181
OTHER	3	1	0	4
	166	87	29	282

$X^2 = 6.86$ $df = 12$ $p - < .05$
$p - < .01$

The results showed that 61.1% of full time professors do use audio-visual media which 69.6% of part time professors, and 55.2% of the subject professors also used the audio-visual media.

Other results among others included in Appendix G are the frequency distributions for male and female professors, professional level of the professors, how the professors are distributed in the different departments of the university, the time designated to teaching, years of teaching experience, age group of the professors, the list of categories into which the courses taught by the professors were distributed and the buildings in which the professors were teaching.

Of the 282 professors included in the sample, 101 included final comments on audio-visual media. The comments were divided into:

Positive attitudes:	Those comments that were favorable to the audio-visual media.
Negative attitudes:	Those comments that were against the audio-visual media.
Non-specific:	Those comments that could not be classified as either favorable or unfavorable attitudes.
Depends on the subject:	Those comments that stated that the use of audio-visual media depended on the subject matter of the professor's course.

No good for my courses: Those comments that stated that audio-visual media was of no use for the professor's course.

Increment of audio-visual media: Those comments that stated that the use of audio-visual media should be incremented.

These extra comments added by the professors at the end of the questionnaire are also included in Appendix G.

CHAPTER V

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

The purpose of this chapter is to present the conclusions, implications and recommendations for further research deriving from this study and the previous investigations in this field. It should be noted that the conclusions to be set forth are limited to the sampled population, the instrument that was used and the time and economic limitations.

This study was concerned with the pattern of usage of audio-visual equipment at the Universidad Ibero Americana and in identifying the factors and attitudes which determine the use or non-use of the media by the professors. The factors that were taken into consideration of this study were: subject matter taught by the professors, age, sex, years of teaching experience, availability and accessibility of equipment, awareness of equipment resources and teachers' attitudes and factors in their creation (e.g. "threats" to job security, openness to change, perceived availability and accessibility).

The following general conclusions have been extracted from this study. Some results are congruent with previous research and some are not. The factors affecting attitudes towards the use or non-use of audio-visual media, are always

the individual characteristics of the institutions that are being surveyed. Conclusions that generalize over different educational situations are hard to make due to particular characteristics of each faculty team. Generalizations to other samples would be a mistake because of the individual problems this particular institution has. Furthermore, the author did not find studies in this field made in her country. Social, economical and cultural characteristics and differences of the sample of this study, have to be considered if a comparison in this field in other countries is to be made.

In general, professors are aware of the existence of the equipment and materials at the university, but they do not know what specific equipment and materials are available. They feel, however, that the professors do not have a good knowledge of the materials. A short brochure should be produced at the university which will inform the professors about the specific equipment and materials that are available at the university. Specific information can be given to the professors if they make more requests.

The variable of age did not have any significant relationship with the use of the media or with the attitudes expressed by teachers. These results differ from those of Kelly in 1960. He found that older professors were more moderate in their attitudes.

The use of audio-visual media differs among the professors that teach in different Departments. Professors in the Science and Engineering, Art, Economics and Business Administration Departments use the most audio-visual equipment and media. The same conclusion resulted from the studies done by Ballew (1960) and Grant (1970). The results of this study, as well as those of Evans, Hopper and Littlejohn (1974) support the hypothesis that the attitudes toward the use of audio-visual media are related to the membership of a particular department.

Years of teaching experience did not have any significant relationship with the use of the media either. The same results were found by Kelly (1960), Eichholz and Rogers (1964) and Young (1974). However, different results were found by Stephens (1971) and Grant (1970). The latter both found that the variable"years of teaching experience" was related to the use of audio-visual media. While Stephens reported that professors with more years of teaching experience tended to utilize media more, Grant found that professors with more years of teaching experience had more negative attitudes.

The results in this study show that there is some relationship between experience and the attitudes teachers have toward the media. Professors with less than five years of teaching experience seem to be more positive about the media than those with more experience. This finding supports that reported by Grant (1970). This might be due to the new methods

in teaching; professors that have been taught with media (more recently) might have better attitudes towards the media, than those who were not exposed to that situation.

A special in-service program could be offered at the university for those professors with more than five years of teaching experience, in order to update their knowledge on AV media. The same type of in-service programs could be offered for professors teaching in faculties with less use of AV media. In this way the use of the media may increase and the attitudes towards the media could be measured in a more specific manner.

Another variable which had no relationship to usage or the attitudes of the professors was sex. An assumption was made that due to the social and cultural characteristics of the Mexican society, women would tend to use media more than men. This might be a true assumption in lower education, but the study showed that this assumption was not valid at the university level. However, in an earlier study, Kelly (1960) reported that women have more positive attitudes toward audio-visual media than do men.

Accessibility was not considered to be a problem affecting the use of audio-visual media. The limited use that is given to the media is not affected by the access problems. Professors, it seems, who do use media will use it no matter where they get the materials and equipment. These results are

not consistent with those reported by Acquino (1970, 1971, 1974), Knowlton and Hawer (1962, 1963) and Hall (1964). They reported that accessibility problems greatly affect the use of audio-visual media. However, the results reported by Finch, Gustilo and Wiensteiner (1970) stating that the variable accessibility does not relate to the use of audio-visual media are supported by the findings of the present study.

Availability of audio-visual media is strongly related to the use of the media and to the attitudes of the professors. It was a general concensus that problems in getting the media were one of the factors affecting the use of these resources and provided for more negative attitudes from the professors. This result is parallel to those reported by Hubbard (1960) and by Leader and Null (1974). While they found that availability of Audio-Visual Media was related to the use of the media, Acquino (1970, 1971, 1974) and Finch, Gustilo and Wiensteiner (1970) did not find a significant relationship between the use of the media and the attitudes toward the availability of the media. However, Finch, Gustilo and Wiensteiner also reported that more available equipment resulted in increased utilization of media.

Equipment can be made more available by giving preference to the use of the media by the teachers at the hours in which more classes are being held at the university. Another, but more costly way of making the equipment more available, is by

purchasing more pieces of equipment. The only way of improving the availability of the materials is by producing and/or purchasing specific materials that are constantly used by professors who do use the equipment (slides, films, overhead transparency facilities).

Professors do not consider media a "threat" to them or that it destroys the normal face-to-face relationship between teachers and students. However, the factor analysis showed that negative attitudes were more important than the positive attitudes. This might be due to the measuring instrument used in this study. The questionnaire used to measure the attitudes was quite general and did not provide for more specific data. A factor analysis provides for a deeper appreciation of the data, and suggests that there are a lot of negative attitudes towards the media among the professors in the university. A more specific type of measurement instrument should be utilized to see what attitudes the professors have towards the AV media.

Knowledge of operation of equipment did not appear to be a factor affecting the use of the audio-visual media in this study. These results support the findings of Kelly (1960). Another factor that does not affect the use of the media was the time dedicated to teach in the university (full-time, part-time or subject).

The equipment most commonly used in the university were the 35 mm slide projectors, the overhead projectors and the opaque projectors. If more media is to be introduced, an investigation should be made to see how these media are used and why, in order to find out about the patterns that affect the choice of media the professors make.

The departments that make more use of the slide library are: Art, Human Sciences and Business Administration and Economics. The main reason for this is that the slide library does not have slides in the subjects for the other facilities. They should try to increase the number of slides and include those subjects which are not included in their present storage. They have ~~their~~ own production, and help may also be provided by students in the photography laboratories, as part of their activities.

Based upon the results and conclusions several implications can be gathered which are relevant to program improvement at the university. It is hoped that each comment will be interpreted in light of results upon which it is based and the data gathering procedures which were used in the study.

Teachers seem to have, in general, favourable attitudes toward audio-visual media. Nevertheless the use of the media is very limited, as well as the variety of equipment

and materials used. Teachers should be fully oriented to each resource available at the university and to new ones being incorporated to the instructional environment.

Many teachers have never had contact with some of the instructional resources. Therefore, it would seem best to provide some kind of pre-service and in-service teacher experiences which include direct exposure to these resources. As Finch, Gustilo and Wiensteiner call it, "hands on" experiences with resources should be considered.

Teachers do not know in general what the available resources (as limited as they may be) are. Exposure to this knowledge should be a task of the authorities of the university.

The personnel designing teacher training programs should take advantage of studies like the present one to see if an increase in the use of the media can occur and to see in which cases and areas improvements may be undertaken. A development of more specific positive attitudes may well result in increased resource use and teacher participation in the activities, if proper attention is given to the programs that will aid the teachers.

The extent to which an instructional resource will be used depends upon the extent to which it is available for use by the teacher. Administrators who are desirous of having teachers fully utilize instructional resources would do well

to make them readily available for use. It appears that the relationship between availability and use is relatively strong; and this is shown in a large number of investigations. Program administrators and supervisors should capitalize on this relationship to attain increased instructional resource utilization, if that is what they want.

Teacher attitude toward a particular instructional resource may indicate his or her attitude toward other resources. Factors such as resource preparation, presentation and application may affect this attitude. The teacher should, therefore, be provided with extensive information relative to each instructional resource. This might include resource preparation and selection as well as resource capabilities and limitations. Relevant knowledge concerning resources may aid each individual teacher to determine where resources might best be utilized within the instructional environment. This is very important, because particularly in this case, it is seen that professors do not use the media as a complement or an aid in their courses; they use it to "change", for some small media presentation, or it is used by the students - instead of written reports they do media presentations. To

start with, before trying to get more resources, teachers should learn about the potentials of each piece of equipment and materials. Starting from the equipment in the audio-visual centre and going into the major installations like the television studio, radio studio, etc., teachers should know of these facilities and their use. They are available to them and are not being used to their full capacity.

Clear-cut channels of communication should be established to provide for positive, as well as negative feedback, and to avoid misunderstandings about the objectives of the media, innovations, or other programs, and the potential changes required with the implementation of these. In-service programs using consultants and other experienced personnel may provide advice and suggestions so that the people involved will be in a better position to handle the inevitable problems associated with innovations in an ongoing system. It would be desirable to produce and distribute brochures for several purposes:

a) One brochure that would inform the professors of the facilities, services and resources available at the university.

b) One or more brochures that would explain specifically each resource with its individual specifications, advantages and limitations. These would be given only to the interested professors under request. As has already been seen, there is a lack of interest for most professors in matters concerning the university in general, and in this way the efforts made by the authorities for the improvement of certain areas would be valuable.

c) If an innovation is to be introduced, the distribution of a brochure, well in advance of the proposed change, including date on objectives, implementation dates; and other pertinent information would enhance the communication process by allowing negative feedback or constructive criticism which may lead to revision or modification of the desired change.

"Significant change, complexity, cost, lack of understanding and teacher involvement, and the innate conservatism of the educational establishment appear to be the major obstacles in the path of innovative adoption. Factors

that tend to encourage acceptance are teacher participation in the planning process, transitional programs each of operation and reliability of equipment, administrative support, effective evaluation tools, and the ability of the innovation to accomplish predetermined educational objectives. By greater concentration of positive factors, and less on criticism of the professors and others involved in the educational establishment, this type of "teacher education" should be more effective. If the main objective is the improvement of the teaching-learning process, we must have the respect, understanding, support and cooperation of the teaching staff." (Van Wyck, 1971, p. 91).

By examining some factors which tend to facilitate resistance and rejection, or rather non-use, we are in a better position to plan for more effective implementation. We should take advantage of the experience and wisdom of teachers in the planning process who are aware of the availability and potentials of media and other resources and enlist the support of influential groups or individuals in the university, particularly in the establishment of a transitional program to bridge the gap between the old and the new, the known and the unknown. Teacher involvement and under-

standing are essential to the acceptance and enduring success of an innovation. Opportunity for interested teachers must be provided to participate in the evaluation and selection of equipment, materials and policies related to their use.

Given the noticeable difference in the amount of use of the audio-visual media in the different departments, special attention should be given to those departments which make more use of the media, so that the services can be improved, and at the same time they could serve as a positive example to the professors of other departments.

Dawson (1971) found that a great proportion of educational leaders felt that instruction on media should represent an integral part of teacher education programs and in-service programs in schools.

The university should be able to provide continual in-service programs at the request of the professors. These programs would enable teachers to get acquainted with audio-visual media and other types of innovations like class assessment, record control, program and course design, etc., as well as other activities that may be new or unknown to them.

The results of this study are important for further considerations of the university authorities on the planning for:

a) Production of software for use in the university, slides, movies, video-tapes, transparencies, etc. could be produced by the laboratories in the university and the slide library in those areas where the most usage of media is seen. In this way, the professors will have the materials constantly at their disposal, thus enhancing their teaching methods.

b) Future acquisition of audio-visual materials and equipment. Acquisition of audio-visual media can be improved by taking into consideration the known characteristics and necessities of the people that use the media.

c) Possible changes and/or improvements in areas that show needs and potentials.

Information gathered from this survey may contribute to the efforts of information-communication agencies within the university to establish more efficient and effective

service capabilities with a wider range of insturctional materials and media.

Careful attention must first be given to the utility and profitable function of the audio-visual media. The faculty must see the media as an extension of their talents and not an amputation.

Among the professors of the sample we have users and non-users of instructional media. Even though we have seen where the use of the media is greater, we have not been able to determine who are the potential acceptors and rejectors of the media.

Due to the problems faced in interviewing the professors, the author has reasons to believe that professors feel some kind of a professional rivalry with the media, which they are reluctant to accept, and therefore will be hard to implement any kind of new programs, without first investigating the reasons for these feelings. It is possible that teachers felt that the authorities doubted the faculty's academic adequacy and effectiveness, and therefore were asking questions about new instructional devices.

There are a number of observations that should be mentioned in light of the experience acquired in this study.

Researchers are recommended to use other types of questionnaires and scales to collect different and more specific data than that collected in this study.

A larger sample should be obtained to enable the researcher to generalize in a more valid way.

Similar studies should be in the future extended to other colleges and universities.

A method should be tried to be devised to compare the difference in attitudes between teachers themselves and the students.

More time should be given to questionnaire responses and interviews.

This study attempted to measure teachers' attitudes toward audio-visual media in a very general way. While positive attitudes were predominant in this study, a factor analysis showed evidence of negative attitudes towards the use of audio-visual media. There is a need to examine the attitudes in a different way, using other scales, personal interviews, more specific questions, etc. It is necessary to make a "precise study" of those variables which appear to be related

in a significant way to the use of the media and see if in fact they are part of the determinant factors influencing the use and non-use situation of the audio-visual media.

Finally, it is hoped that this study presented findings that will stimulate further research on the usage patterns of audio-visual media and the attitudes related to them in a country where very little is known in this field.

SUMMARY

The purpose of this study was to measure the use and none-use patterns of the audio-visual media by professors in a Mexican University, and the factors that influence their general attitudes toward the instructional devices.

The present study starts dealing with an exploration of investigations previous to this report on the different subjects concerning the use and non-use of audio-visual media by teachers, and factors that influence their attitudes towards the media.

The efforts made by previous researchers were considered of great importance for this study and the findings and results are a complement and a source of comparison for the present study.

For this study, assumptions were made about the relationship of certain factors and the use and non-use of audio-visual media by professors. Among these factors wre age, sex, subject matter taught by professors, years of teaching experience, availability of equipment, accessibility of equipment, awareness of equipment resources and the teacher's attitudes and factors in their creation (e.g. "threats" to job security, openness to change, perceived availability and accessibility).

The instrument used in this study was a questionnaire that consisted mostly of closed-ended questions, which aimed at general data gathering and attitude measurement with a Lickert type scale. The statistical analysis consisted of frequency distributions, chi square cross tabulation, a factor analysis and a point biserial correlation. Data on the patters of usage of equipment was gathered by a record followed during a three month period at the audio-visual center of the university.

The limitations of this study were due to time factors, size of the sample, type of instrument used and the characteristics of the professors that were interviewed. It was difficult to convince them to answer the questionnaire, especially when they knew it was about teaching aids and for a master's thesis.

Established relationships found in data analysis include the following:

1. Availability of equipment was significantly related to the use of audio-visual media and to the teachers' attitudes.

2. Years of teaching experience was related to the teachers' attitudes but not so much to the use of the media.

3. The use of audio-visual media is affected by the

subjects, or rather departments the teachers belong to, in the university.

No significant relationship was found between the use of audio-visual media and age, sex, time dedicated to teaching, teaching experience and accessibility problems.

The actual reported use of the equipment was very limited even though the teachers' attitudes were found to be positive in general.

The most obvious recommendations to be drawn from the findings is that the university administrators and interested authorities on media use should take care to make the media available at the audio-visual center and other installations better known by the teachers and favor an improvement on access and availability of the equipment and materials. Teacher education programs would enhance the knowledge and attitudes of the professors at the university and may provide for a larger interest in the general activities of the university.

There were a number of questions left unanswered and others that have been raised in this study. It is important that further research be made not only in this field of educational technology, but in the University itself. This study provides for general information and an idea of the patterns of usage of media and the professors' attitudes.

If improvements of the educational stiuation and

learning resources in particular are to be made, a careful consideration of this study should be taken and deeper investigation should be made.

"It is clear that in this area there is ample room for both clear-sighted analysis and for reaching empirical research. Educators should be prepared in all cases to formulate the aims of teaching which they envisage and then to consider what channels of communication they see best suited to the attainment of their objectives, remembering that simplicity and directness are preferable to and more effective than complexity and involution.....

Sound radio has not been made obsolete by television, nor the film strip by color sound movies. Nor has the teacher in the classroom been made redundant by the studio, the printing shop, or the electronic factory.....

The revolution in teaching techniques may not be as rapid as the changes in the elegant glass buildings that house television stations and business offices - but it is sure to come, none the less."*

*G.Z.F. Bereday and J.A. Lauwerys, (Ed), Communication media and the school. Yearbook Education. Tarrytown-on-Hudson, New York: World Book Company, 1960. p. 13

APPENDIX "A"

List of the Departments and Faculties of the University

LIST OF THE MAIN DEPARTMENTS OF THE UNIVERSITY AND THE FACULTIES INCLUDED IN EACH ONE

SCIENCES & ENGINEERING	ENGINEERING & CHEMICAL SCIENCES CIVIL ENGINEERING MECHANICAL & ELECTRICAL ENGINEERING MATHEMATICS NUTRITION PHYSICS
HUMANITIES	PHILOSOPHY RELIGIOUS SCIENCES INTERNATIONAL HISTORY LITERATURE
ART	ARCHITECTURE DESIGN HISTORY OF ART
CENTERS	DIDACTICS LANGUAGES PSYCHOLOGICAL ORIENTATION
HUMAN SCIENCES	PSYCHOLOGY HUMAN DEVELOPMENT INSTITUTE OF SOCIAL SCIENCES ANTHROPOLOGY SOCIOLOGY LAW COMMUNICATIONS
ADMINISTRATION ECONOMICS	BUSINESS ADMINISTRATION ACCOUNTING ECONOMY INDUSTRIAL RELATIONS

APPENDIX "B"

The Questionnaire

First Pilot Study
Second Pilot Study
Letters accompanying the questionnaire

QUESTIONNAIRE

Please answer each of the following questions included in this questionnaire. Respond as accurately as you can, expressing your knowledge and/or opinions.

1. Name: _____ Sex: _____

2. Your educational/professional level: _____

_____

3. Faculty in which you belong: _____

4. Designation (full-time, part-time, and other): _____

_____

5. Courses you teach in this university:

_____ Room _____

_____ Room _____

_____ Room _____

_____ Room _____

_____ Room _____

6. How many years of teaching experience do you have?

less than 5____ From 6-10____ More than 10____

7. In which age group are you?

20-29____ 30-39____ 40-59____ 60+____

8. Is there audio-visual equipment in the University for your use?

Yes_____ No_____

9. Is there audio-visual material in the University for your use?

Yes_____ No_____

10. List the type of audio-visual equipment you know is available in the University for your use: _____

_____

11. List the type of audio-visual materials you know are available in the University for your use: _____

_____

12. List the type of equipment you know how to operate: _____

_____

13. Do you use any of the following items in your teaching?

a) Never
b) Occasionally (1-5 times a month)
c) Often (6-20 times a month)
d) Very often (more than 20 times a month)

	a	b	c	d
Opaque projector	___	___	___	___
Overhead projector	___	___	___	___
Super 8mm film projector	___	___	___	___
16mm film projector	___	___	___	___
35mm slide/film strip projector	___	___	___	___
tape recorder	___	___	___	___
cassette recorder	___	___	___	___
video equipment	___	___	___	___

others: _____

14. From where do you get the equipment you use in class?

Audio-visual center____ Students_____

Department_____ Others(specify)____

Your own_____ _____

_____

15. Place the number that best fits what you have to say about the following statements:

5 Agree Strongly
4 Moderately agree
3 Neutral
2 Moderately disagree
1 Disagree strongly

_____ Compared to the other ways of teaching, the use of audio visual materials requires too much work;
_____ Recent technological advances will enhance the teachers' role in the classroom;
_____ The University is adequately equipped with media at present;
_____ Wider use of audio visual aids is needed;
_____ Technology in the classroom dispersonalizes instruction;
_____ Students retain longer the material that has been visually presented;
_____ Teachers work harder than necessary because of the lack of equipment and material in most classrooms;
_____ All teachers should take a course in audio visual aids as part of their professional training;
_____ The newer media tend to undermine the teachers' relationship with students;
_____ Exposure to audio-visual materials should inspire students to greater curiosity and learning;
_____ The use of media requires excess planning on the part of the teacher;
_____ Audio-visual media is available in the University;
_____ Audio-visual materials often make learning too superficial;
_____ Instructional media show great possibilities for stimulating teacher creativity.
_____ Instructional media reduce the number of jobs in any field;
_____ There are too many problems in getting audio-visual materials and equipment in the University;
_____ The University needs an audio-visual coordinator;
_____ Teachers are just entertaining when using audio-visual aids;
_____ The personal relationship between teacher and students is lost when media are used;
_____ The use of media in the classroom should be greatly expanded;
_____ Instructional media have the capability of greatly improving instruction;
_____ Audio-visual equipment is too difficult to operate;
_____ When using media, teachers lose some of their importance in the classroom setting;
_____ The use of media makes any subject master more interesting;
_____ Audio-visual methods of teaching simply add to the teachers' choice;
_____ I do not have enough information to know what audio-visual material are appropriate for my class;
_____ Most teachers seem to be doubtful about the value of newer media.

16. Please feel free to comment on the use or non-use of audio-visual media in classroom:

17. This is a pilot study; if you have any suggestions or comments about this questionnaire, they will be greatly appreciated. Thank you very much for your cooperation.

QUESTIONAIRIO

Fevor de contester cada pregunta incluida en este questionario. Responde lo major que pueda expresando sus conocimientos y opiniones.

1. Nombre: _____ Sexo: _____

2. Nivel profesional/académico:

Licenciatura _____ Maestría _____ Doctorade _____ Otro _____

3. Departamento al que peraenece: _____

4. Tiempo designado a la docencia: _____

Tiempo completo _____ Medió tiempo _____ Asignatura _____

Otro _____

5. Cursos que imparte en la Universidad Iberoamericana:

_____ Salon _____

_____ Salon _____

_____ Salon _____

_____ Salon _____

_____ Salon _____

6 ¿Cuantos años lleva dando clases?

menos de 5 _____ de 6 a 10 anos _____ más de 10 anos _____

7. ¿A que grupo de edad pertenece?

20-29 _____ 30-39 _____ 40-59 _____ 60 _____

8 ¿Existe equipo audiovisual para su propio uso? en la UIA?

Si _____ No _____ No se _____

9. ¿Existe material audiovisual para su propio uso en la UIA?

Si _____ No _____ No se _____

10. Haga una lista del equipo audiovisual que a su conocimiento esté disponible para ud. en la UIA.

_____

_____

_____

_____

11. Haga una lista del material audiovisual qua a su conocimiento esté disponible para ud. en la UIA.

_____

12. Haga una lista del equipo audiovisual que ud. sabe operar.

13. Utilizo ud. alguno de los siguientes aparatos en sus clases?

A- Nunca
B- Ocasionalmente (1-5 veces al mes)
C- Seguido (6-10 veces al mes)
D- Muy seguido (más de 10 veces al mes)

	a	b	c	d
Proyector de cuerpos opacos				
Retroproyector				
Proyector de cine Super 8 mm				
Proyector de cine 16mm				
Proyector de transparendias				
Proyector de filmines				
Grabadores				
Equipo de video tape				
Otro				

14. ¿Quién opera el equipo que usa ud. en su clase?

Ud. mismo ____ los alumnos ____ otro ____

15. ¿Donde consigue el equipo que usa en su clase?

Depto. Audiovisual (Servicios Generales)
Dirección de su departamento
Equipo propio
Equipo de los alumnos
Otro (donde)

16. ¿Donde consigue el material audiovisual que usa en su clase?

17. Colocue el número que mejor queda en las afirmaciones siguientes según su opinion.

De acuerdo completamente (1)
De acuerdo (2)
Neutral (3)
Desacuerdo (4)
Desacuerdo completamente (5)

____ Los medios audiovisuales tienen la capacidad de mejorar la instrucción.
____ El equipo audiovisual es difícil de operar.
____ La instrucción audiovisual requiere de muchos preparativos y trabajo comparada con otros métodos de instrucción.
____ La nueva tecnología audiovisual realza el rol del maestro en su clase.
____ La UIA esta bien equipada con medios audiovisuales.
____ Un incremento en el uso de medios audiovisuales es requerido en la Universidad.
____ Los alumnos recuerdan con mayor facilidad el material presentado a ellos visualmente.
____ Los maestros no necesitan toabajar arduamente, puesto que los salones están bien equipados con equipo audiovisual.
____ Todos los maestros deberían tomar un curso sobre medios audio-visual como parte de su entrenamiento.
____ Los medios audiovisuales tienden a disminuir la relación entre alumno y y maestro.
____ Los medios audiovisuales hacen que el aprendizaje sea superficial.
____ La instrucción audiovisual ayuda a estimuler la creatividad del maestro.
____ La instrucción audiovisual reduce el número de empleos.
____ Existen problemas para conseguir equipo audiovisual en la UIA.
____ La UIA necesita un "coordinador audiovisual ".
____ Los profesores tienen un buen conocimiento acerca del material y equipo existentes en la UIA.
____ Los medios audiovisuales despersonalizan la instruccion.
____ Los maestros unicamente entretienen al los alumnos cuando usan los medios audiovisuales.
____ El maestro pierde su importancia en la clase cuando usa medios audiovisuales.
____ Es dudoso el valor de los medios audiovisuales para la instrucción.

18. ¿Existe algún comentario que quiera ud. hacer sobre el uso o no uso de los medios audiovisuales?
Si_____ No_____

¿Cuál? _____

_____

_____

_____

INSTRUCTIVO PARA EL ENTREVISTADOR

Sr. Entrevistador:

Este cuestionario deberá ser entregado personalmente a cada profesor que aparece en la lista que le ha sido entregada. El profesor deberá contestar el cuestionario el mismo y responder el máximo número de preguntas. El tiempo requerido para respnder las 18 preguntas es de aproximadamente 10 - 15 minutos. Es preferible que usted espere a que el cuestionario sea respondido, pues dura muy poco tiempo. Si el profesor no lo quiere hacer en ese momento tendrá que ir a recoger el cuestionario cuando este terminado.

Si el profesor no está dando clases el presente semestre, pero estuvo dando clases uno o dos semestres antes de este, todavía se le puede hacer el cuestionario.

La mayoría de las preguntas requieren únicamente una marca.

Una pregunta que se le hará en varios casos casos es sobre las preguntas # 10 y 11. No están repetidas. Solamente hay que aclarar que una cosa es "Material" y otra cosa es "Equipo". Si no saben la diferencia, entonces se les puede explicar de la siguiente manera:

"Material Audiovisual son transparencias, películas, micas, etc. "

"Equipo Audiovisual se refiere a los aparatos".

Algunas personas no responderán la pregunta # 13 y consecuentemente tampoco la 14, 15, y 16. Trate de que todas sean respondidas. Habrá personas que aunque no contesten la # 13 si responderán las siguentes 3 preguntas, ó viceversa.

Todas las frases en la pregunta # 17 necesitan ser respondidas con uno de los cinco números.

Por favor no comente el cuestionario con el profesor, trate de que lo responda completamente.

Atentamente,

Marion Gimbel

Marion Gimbel
Tel. 568-0551

MARION GIMBEL

NUBES 208
JARDINES DEL PEDREGAL DE SAN ANGEL
MEXICO 20, D.F.

TEL. 5·68·05·51
APARTADO POSTAL 343

México, D.F. Abril - Mayo de 1977

A quien corresponda:

Por medio de la presente hago constar que el (la) joven _____ está autorizado (a) para realizar entrevistas a los profesores de la Universidad Iberoamericana, con el fin de obtener datos para una Tesis de Maestría sobre el uso de los medios audiovisuales para la educación. Esta investigación a su vez cuenta con el interés y el apoyo de las autoridades de la Universidad Iberoamericana.

Muchas gracias por su cooperación.

Atentamente,

Marion Gimbel

Marion Gimbel
Lic. Ciencias y Técnicas de la Información
Universidad Iberoamericana

uia
UNIVERSIDAD IBEROAMERICANA
DIVISION DE CIENCIAS SOCIALES/ DEPARTAMENTO DE COMUNICACION

4 de Mayo de 1977.

A QUIEN CORRESPONDA:

Por medio de la presente se hace constar que este departamento de Comunicación está enterado de la investigación de Maestría que está llevando a cabo la Srita. Marion Gimbel, exalumna de este Departamento.

Esta investigación es de interés para el Departamento y otras dependencias de la Universidad ya que se propone medir la popularidad de los medios audiovisuales en esta Universidad.

Este trabajo será realizado en el presente mes de mayo, y se agradecerá la colaboración de todos los maestros elegidos, que no ocupará más de 10 minutos de su tiempo.

A t e n t a m e n t e ,

Lic. José Cárdenas Hernández
Director del Departamento de
C o m u n i c a c i ó n .

México, D.F. Abril - Mayo de 1977

Estimado Profesor:

El cuestionario que acompaña esta carta es parte de una investigación que se está realizando para una Tesis de Maestría. Le agradecería que contestara el cuestionario, quitándole únicamente 10 - 15 minutos de su valioso tiempo. La investigación trata sobre el uso de los medios audiovisuales en la educación; es de gran importancia para mi tesis y cuento con el interés y el apoyo de las autoridades de la Universidad Iberoamericana.

Agradeciéndole de antemano su valiosa ayuda, me pongo a sus órdenes.

Atentamente,

Marion Gimbel

Marion Gimbel
Lic. Ciencias y Técnicas de la Información.
Universidad Iberoamericana

Nubes # 208
México 20, D.F. México
Tel. 568-0551

APPENDIX "C"

Data Collection Form of the AV Center.

Data Collection Form for the Analysis of Demand of Equipment.

U N I V E R S I D A D I B E R O A M E R I C A N A

DIRECCION DE SERVICIOS GENERALES / DEPARTAMENTO AUDIOVISUAL

NOMBRE DE LA CARRERA _____

Solicita: Proyector(es) No.(s)_____ de Cine 16 mm. _____ Super 8 mm._____

Transparencias _____, Opacos_____, Retroproyector_____, Carrousel _____,

Caja Porta Transparencias_____, Bobina_____, Extensión_____, Receptáculo_____.

NOTA: Será indispensable el presentar la credencial para sacar cualquier aparato o aditamento del Departamento de Mantenimiento, el cual deberá ser recogido o devuelto en éste de las 8:00 a las 13:30 hrs. y de 16:00 a 20:00 hrs. y únicamente se entregará el equipo de 13:30 a 16:00 y de las 20:00 hrs. en adelante en el Departamento de Vigilancia.

No. de Salón_____ Fecha_____

Vo. Bo. _____ Nombre del Responsable _____

_____

Credencial No.: _____

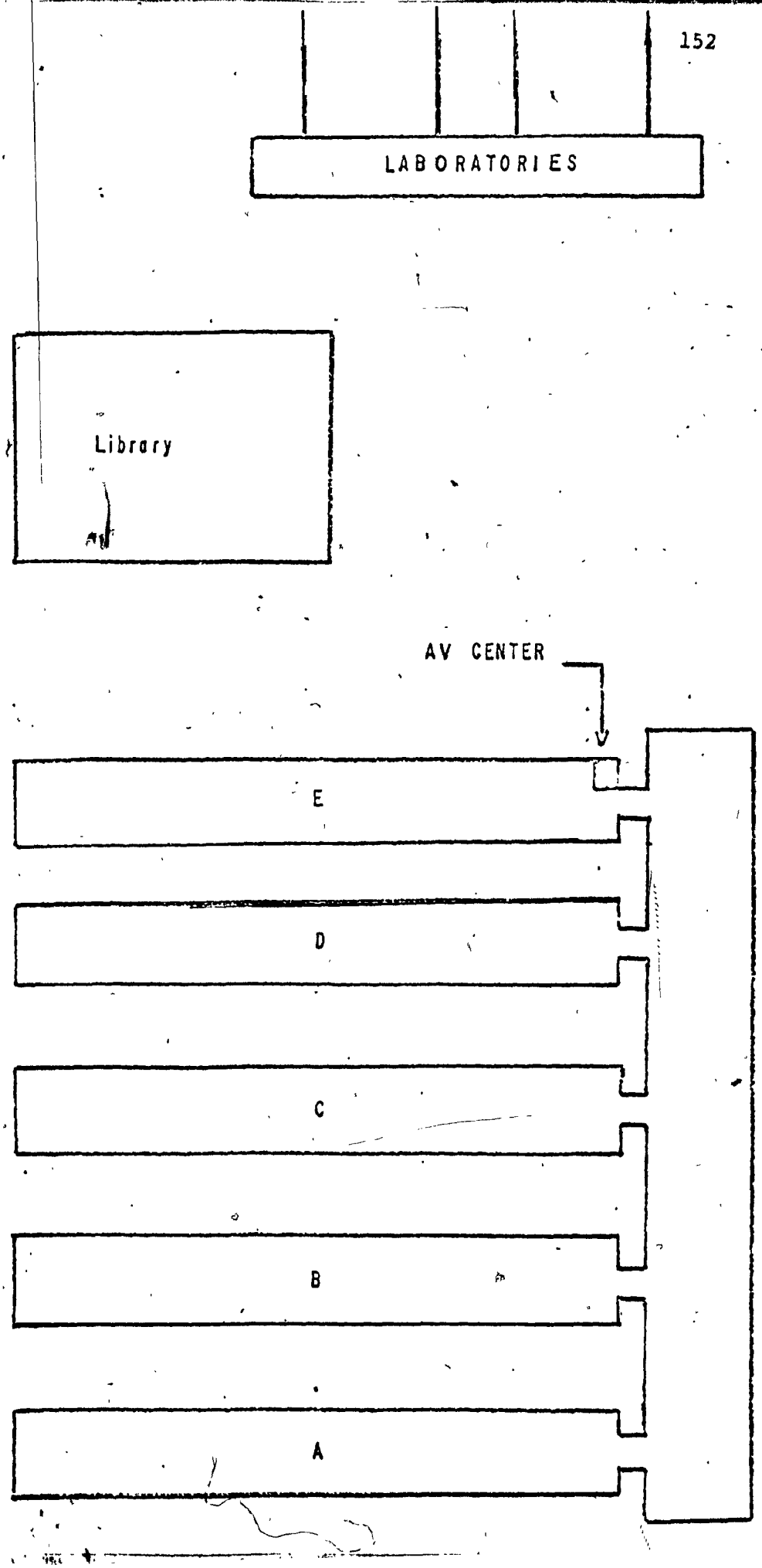
Nota: Se cobrará multa de $ 75.00 por día a toda persona que saque el equipo audiovisual fuera de la Universidad.

UNIVERSIDAD IBERO AMERICANA — DIRECCION DE SERVICIOS GENERALES — DEPARTAMENTO AUDIOVISUAL

FECHA	NOMBRE DE LA CARRERA	No. DEL SALON	PARA USO DE: PROFESOR	PARA USO DE: ALUMNO	PROYECTOR DE CINE 16 mm.	PROYECTOR DE CINE SUPER 8 mm.	PROYECTOR DE CINE 8 mm.	PROYECTOR DE TRANSPARENCIAS 35 mm.	PROYECTOR DE FILMINAS	PROYECTOR DE CUERPOS OPACOS	RETROPROYECTOR	PANTALLAS

APPENDIX "D"

University Layout


LABORATORIES
Library
AV CENTER
E
D
C
B
A

APPENDIX "E"

List of Available Equipment and Materials at the University

LIST OF AUDIO-VISUAL EQUIPMENT & MATERIAL AVAILABLE AT THE UNIVERSIDAD IBERO AMERICANA *

1. Pool Equipment for General Distribution

AUDIO-VISUAL CENTER

QUANTITY	EQUIPMENT
3	16 mm Movie Projectors in Use
4	35 mm Slide Projectors
6	Overhead Projectors
3	Opaque Projectors
3	Film Strip Projectors
1	Super 8 mm Movie Projector
1	9 mm Movie Projector
6	Screens

This audio-visual equipment is available for general use.

* This information was provided in April, 1977 by the authorities of each department.

11. Other Installations and Audio-Visual Equipment Available only for Specialist and Departmental Use.

Science and Engineering:	1 35 mm Slide Projector 1 Film Strip Projector
Art:	3 35 mm Slide Projectors 3 35 mm "Manual" Slide Projectors
Teacher Training Center: (Didactics)	1 Portable VTR 1 Super 8 mm Camera and Projector 1 35 mm Slide Projector 1 35 mm Photographic Camera 1 Tape Recorder 1 Cassette Recorder 1 Overhead Projector 1 Opaque Projector 1 Record Player
Slide Library:	1 Photographic Camera 1 Slide Duplicator 1 Microfilm Maker Illumination Equipment
Communications:	1 Television Studio Containing 4 TV Cameras, 2 VT Recorders, 2 Sound Tape Recorders, 2 Turntables, 2 35 mm Slide Projectors, 1, 16 mm Movie Projector, 1 1 TV Camera for Films, Microphones, Illumination Equipment, etc. 1 Radio Studio Containing Tape Recorders, Mixers, Turntables Microphones, etc. (quantities were not confirmed)

1. Movie Laboratory Containing only 2 Super 8 mm Movie Cameras and 2, 16 mm Cameras.

1 Photography Laboratory Containing black & white equipment for use of 6 or 7 students at a time. (equipment and quantities were not confirmed.)

III. Audio-Visual Materials Available at the University

Television Studio:	Few Video Tapes (quantities were not confirmed.)
Slide Library:	54,000 Slides - 80% - Art Topics - 20% - Biology Physics Psychology Human Activities
	35 Film Strips

APPENDIX "F"

Demand of Audio-Visual Materials (slides)

1 of

SUMMARY OF THE ANALYSIS OF DEMAND FOR EQUIPMENT BY PROFESSORS

FACULTIES	EQUIPMENT						
	PROJECTOR	SUPER 8 MM PROJECTOR	8 MM PROJECTOR	35 MM SLIDE PROJECTOR	FILM STRIP PROJECTOR	OPAQUE PROJECTOR	OVERHEAD PROJECTOR
ENGINEERING & CHEMICAL SCIENCES	3	1	0	13	0	11	1
CIVIL ENGINEERING	4	0	0	15	2	7	2
MECHANICAL & ELECTRIC ENGINEERING	5	3	1	18	2	22	24
MATHEMATICS	0	0	0	0	0	0	0
NUTRITION	10	1	0	19	7	3	17
PHYSICS	2	0	0	0	0	0	0
PHILOSOPHY	1	0	0	0	0	1	0
RELIGIOUS SCIENCES	0	0	0	0	0	0	0
INTERNATIONAL	1	0	0	5	4	0	0
LITERATURE	0	0	0	1	1	0	0
HISTORY	0	0	0	5	0	0	0
ARCHITECTURE	3	0	0	32	4	10	10
DESIGN	5	4	0	31	1	11	3
HISTORY OF ART	1	0	0	19	11	5	1
DIDACTICS	2	0	0	0	0	3	0
LANGUAGES	0	0	0	1	31	1	0
PSYCHOLOGICAL ORIENTATION	0	0	0	0	0	0	0
SOCIOLOGY	1	0	0	1	0	1	1
HUMAN DEVELOPMENT	1	0	0	1	1	3	0
ANTHROPOLOGY	2	0	0	6	0	0	0
PSYCHOLOGY	7	2	0	13	0	4	2
LAW	0	0	0	0	0	0	0
COMMUNICATIONS	3	3	0	10	1	0	0
BUSINESS ADMINISTRATION	15	1	0	23	1	19	22
ACCOUNTING	0	0	0	0	0	3	34
ECONOMY	0	0	0	0	0	0	0
INDUSTRIAL RELATIONS	6	1	0	3	1	5	7
TOTAL	72	16	1	216	67	109	124

SUMMARY OF THE ANALYSIS OF DEMAND FOR EQUIPMENT BY PROFESSORS

	EQUIPMENT							
PROJECTOR	SUPER 8 MM PROJECTOR	8 MM PROJECTOR	35 MM SLIDE PROJECTOR	FILM STRIP PROJECTOR	OPAQUE PROJECTOR	OVERHEAD PROJECTOR	SCREEN	TOTAL
:NCES 3	1	0	13	0	11	1	1	30
4	0	0	15	2	7	2	0	30
IEERING 5	3	1	18	2	22	24	0	75
0	0	0	0	0	0	0	0	0
10	1	0	19	7	3	17	0	57
2	0	0	0	0	0	0	0	2
1	0	0	0	0	1	0	0	2
0	0	0	0	0	0	0	0	0
1	0	0	5	4	0	0	0	10
0	0	0	1	1	0	0	0	2
0	0	0	5	0	0	0	0	5
3	0	0	32	4	10	10	6	65
5	4	0	31	1	11	3	1	56
1	0	0	19	11	5	1	0	37
2	0	0	0	0	3	0	0	5
0	0	0	1	31	1	0	0	33
0	0	0	0	0	0	0	0	0
1	0	0	1	0	1	1	0	4
1	0	0	1	1	3	0	0	6
2	0	0	6	0	0	0	0	8
7	2	0	13	0	4	2	1	29
0	0	0	0	0	0	0	0	0
3	3	0	10	1	0	0	0	18
15	1	0	23	1	19	22	1	82
0	0	0	0	0	3	34	0	37
0	0	0	0	0	0	0	0	0
6	1	0	3	1	5	7	0	23
72	16	1	216	67	109	124	11	616

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1 of

SUMMARY OF THE ANALYSIS OF DEMAND FOR EQUIPMENT BY STUDENTS

FACULTIES	EQUIPMENT						
	PROJECTOR	SUPER 8 MM PROJECTOR	8 MM PROJECTOR	35 MM SLIDE PROJECTOR	FILM STRIP PROJECTOR	OPAQUE PROJECTOR	OVERHEA PROJECT
ENGINEERING & CHEMICAL SCIENCES	0	0	0	4	2	1	0
CIVIL ENGINEERING	3	0	0	5	0	4	0
MECHANICAL & ELECTRIC ENGINEERING	5	1	0	9	1	10	5
MATHEMATICS	0	0	0	0	0	0	0
NUTRITION	6	0	0	10	2	5	2
PHYSICS	0	0	0	0	0	0	0
PHILOSOPHY	0	0	0	0	1	0	0
RELIGIOUS SCIENCES	0	0	0	0	0	0	0
INTERNATIONAL	0	0	0	0	0	0	0
LITERATURE	0	0	0	0	0	0	0
HISTORY	0	0	0	0	0	0	1
ARCHITECTURE	3	0	0	31	1	11	3
DESIGN	9	2	0	17	1	23	4
HISTORY OF ART	0	0	0	0	0	0	0
DIDATICS	0	0	0	0	0	0	0
LANGUAGES	0	0	0	0	0	0	0
PSYCHOLOGICAL ORIENTATION	0	0	0	0	0	0	0
SOCIOLOGY	2	0	0	0	0	3	0
HUMAN DEVELOPMENT	0	0	0	0	0	0	0
ANTHROPOLOGY	0	0	0	0	0	0	0
PSYCHOLOGY	4	2	1	6	1	1	0
LAW	0	0	0	1	0	0	0
COMMUNICATIONS	2	5	1	5	0	0	3
BUSINESS ADMINISTRATION	14	2	1	6	3	4	4
ACCOUNTING	0	0	0	0	0	0	1
ECONOMY	1	0	0	0	0	1	1
INDUSTRIAL RELATIONS	2	0	0	1	1	1	0
TOTAL	51	12	3	95	13	64	24

SUMMARY OF THE ANALYSIS OF DEMAND FOR EQUIPMENT BY STUDENTS

	EQUIPMENT								
	PROJECTOR	SUPER 8 MM PROJECTOR	8 MM PROJECTOR	35 MM SLIDE PROJECTOR	FILM STRIP PROJECTOR	OPAQUE PROJECTOR	OVERHEAD PROJECTOR	SCREEN	TOTAL
SCIENCES	0	0	0	4	2	1	0	0	7
	3	0	0	5	0	4	0	0	12
ENGINEERING	5	1	0	9	1	10	5	0	31
	0	0	0	0	0	0	0	0	0
	6	0	0	10	2	5	2	0	25
	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	1
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	1
	3	0	0	31	1	11	3	5	54
	9	2	0	17	1	23	4	0	56
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
IN	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	3	0	0	5
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	4	2	1	6	1	1	0	0	15
	0	0	0	1	0	0	0	0	1
	2	5	1	5	0	0	3	1	17
	14	2	1	6	3	4	4	0	34
	0	0	0	0	0	0	1	0	1
	1	0	0	0	0	1	1	0	3
	2	0	0	1	1	1	0	0	5
	51	12	3	95	13	64	24	6	268

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ANALYSIS OF THE DEMAND OF 35 MM SLIDES (AUDIO-VISUAL MATERIALS)

DURING JUNE 1975 THROUGH MAY 1976

SCIENCES & ENGINEERING	CHEMISTRY	27	
	ENGINEERING & CHEMICAL SCIENCES	8	
	CIVIL ENGINEERING & MECHANICAL & ELECTRICAL ENGINEERING	70	
	MATHEMATICS	0	
	NUTRITION	28	
	PHYSICS	1	134
HUMANITIES	PSYCHOLOGY	10	
	RELIGIOUS SCIENCES	5	
	INTERNATIONAL	69	
	HISTORY	29	
	LITERATURE	12	125
ART	ARCHITECTURE	164	
	DESIGN	155	
	HISTORY OF ART	198	517
CENTERS	LANGUAGES	13	
	PSYCHOLOGICAL ORIENTATION	0	13
HUMAN SCIENCES	PSYCHOLOGY	95	
	HUMAN DEVELOPMENT	12	
	SOCIOLOGY AND SOCIAL & POLITICAL SCIENCES	7	
	ANTHROPOLOGY	7	
	LAW	17	
	COMMUNICATIONS	117	255
	BUSINESS ADMINISTRATION	83	
	ACCOUNTING	54	
	ECONOMY	6	
	INDUSTRIAL RELATIONS	59	202
		TOTAL	1,246

APPENDIX "G"

Frequency Distributions for Additional Variables

TABLE A

"Frequency Distribution for Sex of Professors"

	FREQUENCY	PERCENTAGES
MASCULINE	221	78.4
FEMININE	61	21.6
TOTAL	282	100.0

$M = 1.216$ $SD = .412$ $SD^2 = .170$

TABLE B

"Frequency Distributions of the Professional Level of the Professors"

	FREQUENCY	PERCENTAGES
D.A.	211	74.8
M.A.	41	14.5
PH. D.	26	9.2
OTHER	3	1.1
N. R.	1	.4
TOTAL	282	100.0

$M = 1.376$ $SD = .726$ $SD^2 = .527$

TABLE C

"Frequency Distributions of the Professors in the Departments"

	FREQUENCY	PERCENTAGE
SCIENCES & ENGINEERING	67	30.9
HUMANITIES	21	7.4
ART	44	15.6
CENTERS	8	2.8
HUMAN SCIENCES	79	28.0
ADMINISTRATIONS ECONOMICS	43	15.2
TOTAL	282	100.0

$M = 3.355$ $SD = 1.928$ $SD^2 = 3.717$

TABLE D

"Frequency Distributions of the Time Designated to Teaching"

	FREQUENCY	PERCENTAGE
FULL-TIME	72	25.5
PART-TIME	23	8.2
SUBJECT	181	64.2
OTHER	4	1.4
N.R.	2	.7
TOTAL	282	100.0

$M = 2.418$ $SD = .888$ $SD^2 = .789$

TABLE E

"Frequency Distributions of the Years of Teaching Experience the Professors have"

	FREQUENCY	PERCENTAGE
LESS THAN FIVE YEARS	194	68.8
MORE THAN FIVE YEARS	87	30.9
N. R.	1	.4
TOTAL	282	100.0

M = 1.316 SD = .473 SD^2 = .224

TABLE F

"Frequency Distributions of the Age Groups of the Professors"

	FREQUENCY	PERCENTAGE
LESS THAN 39 YEARS	211	74.8
MORE THAN 40 YEARS	69	24.5
N.R.	2	.7
TOTAL	282	100.0

M = 1.259 SD = .455 SD^2 = .207

TABLE G

"Categories of the Courses offered at the University"

	FREQUENCY	PERCENTAGES
ENGINEERING, DRAWING AND DESIGN	45	14.61
PHYSICS AND CHEMISTRY	26	8.44
MATHEMATICS & STATISTICS	29	9.42
ENGINEERING THEORY	11	3.57
ARCHITECTURAL THEORY	20	6.49
NUTRITION	11	3.57
PHILOSOPHY AND RELIGION	8	2.60
HISTORY	7	2.27
LITERATURE	5	1.62
PSYCHOLOGY	31	10.06
SOCIOLOGY & DEVELOPMENT	14	4.55
LANGUAGES	3	.97
LAW	29	9.42
ANTHROPOLOGY	2	.65
COMMUNICATION	16	5.19
INDUSTRIAL RELATIONS	39	12.66
N. R.	12	3.89
TOTAL	308	100.00

$M = 9.42$ $SD = 1.25$ $SD^2 = 1.58$

TABLE H

" Frequency Distributions of the Buildings in which the Courses are Taught "

	FREQUENCY	PERCENTAGES
A	72	21.55
B	51	15.21
C	34	10.17
D	30	8.96
E	26	7.78
LABORATORIES	69	20.65
N.R.	52	15.57
TOTAL	334	100.00

M= 3.90 SD= 2.22 SD^2 = 4.95

TABLE I

" List the Type of Audio-Visual Equipment you know is Available in the University for your Use "

	FREQUENCY	PERCENTAGES
OPAQUE PROJECTOR	87	15.70
OVERHEAD PROJECTOR	70	12.64
SUPER 8 MM PROJECTOR	16	2.89
16 MM PROJECTOR	12	2.17
35 MM SLIDE PROJECTOR	120	21.66
FILM STRIPS	8	1.44
TAPES RECORDERS	28	5.05
V.T. EQUIPMENT	16	2.89
OTHERS (LABS., SCREENS, ETC)	22	3.97
MOVIE PROJECTOR	53	9.57
PROJECTORS	20	3.61
DO NOT KNOW	57	10.29
THERE IS NO EQUIPMENT	27	4.87
N. R.	18	3.25
TOTAL	554	100.0

M = 6.30 SD = 4 SD^2 = 16.70

TABLE J

" List the Type of Audio-Visual Materials you know is Available in the University for your Use "

	FREQUENCY	PERCENTAGES
35 MM SLIDES	73	22.26
TRANSPARENCIES	8	2.44
FILMS	14	4.27
FILM STRIPS	4	1.22
TAPES	12	3.66
MAGAZINES	6	1.83
BOOKS	7	2.13
SCALE MODELS	3	.91
GRAPHICS	2	.61
DO NOT KNOW	65	19.82
N. R.	30	9.15
OTHERS	17	5.18
TOTAL	328	100.00

M = 7.7 SD = 4.24 SD^2 = 18.02

TABLE K

" How often do you Use Audio-Visual Media ?"

	FREQUENCY	PERCENTAGES
NEVER	2324	76.85
OCCASIONALLY	562	18.58
OFTEN	108	3.57
VERY OFTEN	30	.99
TOTAL	3024	100.00

M = 1.287 SD = 0.579 SD^2 = .34

TABLE L

" From Where do you Get the Equipment you Use in Class ? "

	FREQUENCY	PERCENTAGES
AUDIO-VISUAL CENTER	86	30.5
FACULTY	18	6.4
OWN	14	5.0
STUDENT'S	4	1.4
OTHER	3	1.1
SEVERAL	41	14.5
N. R.	116	41.2
TOTAL	282	100.00

M = 4.434 SD = 2.673 SD^2 = 7.175

TABLE M

" From Where do you Get the Audio-Visual Material you Use in Class ?"

	FREQUENCY	PERCENTAGES
AUDIO-VISUAL CENTER	1	.4
FACULTY	14	5.0
OWN	77	27.3
STUDENT'S	11	3.9
EMBASSIES	2	.7
OTHER	8	2.8
SEVERAL	49	17.4
N. R.	120	42.6
TOTAL	282	100.0

$M = 5.897$ $SD = 2.322$ $SD^2 = 5.393$

TABLE N

"Who Operates the Audio-Visual Equipment you use in your class ? "

	FREQUENCY	PERCENTAGES
PROFESSORS	98	34.8
STUDENTS	40	14.2
BOTH	26	9.2
OTHER	2	.7
N. R.	116	41.2
TOTAL	282	100.0

M = 3.495 SD= 2.262 SD^2= 5.115

TABLE 0

" Frequency Distributions for the Extra Commentaries given by the Professors at the end of the Questionnaire "

	FREQUENCY	PERCENTAGES
POSITIVE	35	12.4
NEGATIVE	10	3.5
NO SPECIFIC	6	2.1
DEPENDS ON THE SUBJECT	9	3.2
NO GOOD FOR MY COURSE	12	4.3
INCREMENT AUDIO-VISUAL MEDIA	29	10.3
NO COMMENTS	181	64.2
TOTAL	282	100.0

$M = 3.396$ $SD = 2.126$ $SD^2 = 4.522$

TABLE P

"List the type of equipment you know how to operate"

OPAQUE PROJECTOR	84	12.88
OVERHEAD PROJECTOR	62	9.51
SUPER 8 MM PROJECTOR	25	3.83
16 MM PROJECTOR	16	2.45
35 MM SLIDE PROJECTOR	153	23.47
FILM STRIP	20	3.07
TAPE RECORDERS	78	11.96
V.T. EQUIPMENT	14	2.15
OTHERS (LABS., SCREENS, ETC.)	21	3.22
MOVIE PROJECTORS (GRAL.)	71	10.89
PROJECTORS	51	7.82
DO NOT KNOW	9	1.38
THERE IS NO EQUIPMENT	4	.61
NO RESPONSE	44	6.74
TOTAL	652	100.0

$M = 6.33 \quad SD = 3.16 \quad SD^2 = 9.96$

ATTITUDE 1

" The Audio-Visual Media have the Capability of greatly improving Instruction "

	FREQUENCY	PERCENTAGES
AGREE	236	83.7
NEUTRAL	23	8.2
DISAGREE	8	2.8
N.R.	15	5.3
TOTAL	282	100.0

$M = 1.146$ $SD = .431$ $SD^2 = .185$

ATTITUDE 2

" Audio-Visual Equipment is hard to Operate "

	FREQUENCY	PERCENTAGES
AGREE	19	6.7
NEUTRAL	69	24.5
DISAGREE	178	63.1
N.R.	16	5.7
TOTAL	282	100.0

$M = 2.598$ $SD = .620$ $SD^2 = .385$

ATTITUDE 3

"Compared to Other Ways of Teaching, the Use of Audio-Visual Materials Requires too much Work "

	FREQUENCY	PERCENTAGES
AGREE	137	48.6
NEUTRAL	43	15.2
DISAGREE	83	29.4
N.R.	19	31.6
	282	100.00

$M = 1.795$ $SD = .893$ $SD^2 = .797$

ATTITUDE 4

" Recent Technological Advances will Enhance the Professors' Role in the Classroom "

	FREQUENCY	PERCENTAGES
AGREE	143	50.7
NEUTRAL	59	20.9
DISAGREE	64	22.7
N.R.	16	5.7
TOTAL	282	100.0

$M = 1.703$ $SD = .832$ $SD^2 = .693$

ATTITUDE 5

" The University is Adequately Equipped with Media at Present "

	FREQUENCY	PERCENTAGES
AGREE	48	17.0
NEUTRAL	101	35.8
DISAGREE	102	36.2
N.R.	31	11.0
TOTAL	282	100.0

M = 2.215 SD = .744 SD^2 = .554

ATTITUDE 6

" Wider Use of Audio-Visual Media is Required at the University "

	FREQUENCY	PERCENTAGES
AGREE	198	70.2
NEUTRAL	37	13.1
DISAGREE	21	7.4
N. R.	26	9.2
TOTAL	282	100.0

M = 1.309 SD = .616 SD^2 = .379

ATTITUDE 7

" Students Retain Longer the Material that has been Visually Presented to Them "

	FREQUENCY	PERCENTAGES
AGREE	200	70.9
NEUTRAL	44	15.6
DISAGREE	21	7.4
N. R.	17	6.0
TOTAL	282	100.0

$M = 1.325$ $SD = .616$ $SD^2 = .370$

ATTITUDE 8

" Professors do not Need to Work Harder than Necessary because the Classrooms are well equipped with Audio-Visual Media"

	FREQUENCY	PERCENTAGES
AGREE	45	16.0
NEUTRAL	53	16.8
DISAGREE	161	57.1
N.R.	23	8.2
TOTAL	282	100.0

$M = 2.448$ $SD = .773$ $SD^2 = .597$

ATTITUDE 9

" All Professors should take a Course in Audio-Visual Media, as part of their Professional Training "

	FREQUENCY	PERCENTAGES
AGREE	181	64.2
NEUTRAL	37	13.1
DISAGREE	49	17.4
N. R.	15	5.3
TOTAL	282	100.0

M = 1.506 SD = .787 SD^2 = .619

ATTITUDE 10

" The Audio-Visual Media tend to Undermine the Professors' Relationship with the Students "

	FREQUENCY	PERCENTAGES
AGREE	38	13.5
NEUTRAL	44	15.6
DISAGREE	183	64.9
N. R.	17	6.0
TOTAL	282	100.0

M = 2.547 SD = .733 SD^2 = .537

ATTITUDE 11

" Audio-Visual Media make Learning too Superficial "

	FREQUENCY	PERCENTAGES
AGREE	30	10.6
NEUTRAL	27	9.6
DISAGREE	209	74.1
N. R.	16	5.7
TOTAL	282	100.0

M = 2.673 SD = .669 SD^2 = .447

ATTITUDE 12

" Instructional Media Show Great Possibilities for Stimulating Professor Creativity "

	FREQUENCY	PERCENTAGES
AGREE	180	63.8
NEUTRAL	59	20.9
DISAGREE	27	9.6
N. R.	16	5.7
TOTAL	282	100.0

M = 1.425 SD = .670 SD^2 = .449

ATTITUDE 13

" Instructional Media Reduce the Number of Jobs "

	FREQUENCY	PERCENTAGES
AGREE	20	7.1
NEUTRAL	47	16.7
DISAGREE	194	68.8
N. R.	21	68.8
TOTAL	282	100.0

$M = 2.667$ $SD = .614$ $SD^2 = .377$

ATTITUDE 14

" There are too may Problems in getting Audio-Visual Media in the University "

	FREQUENCY	PERCENTAGES
AGREE	100	35.5
NEUTRAL	102	36.2
DISAGREE	53	18.8
N. R.	27	9.6
TOTAL	282	100.0

$M = 1.816$ $SD = .754$ $SD^2 = .568$

ATTITUDE 15

" The University Needs an Audio-Visual Coordinator"

	FREQUENCY	PERCENTAGES
AGREE	131	46.5
NEUTRAL	97	34.4
DISAGREE	33	11.7
N. R.	21	7.4
TOTAL	282	100.0

$M = 1.625$ $SD = .699$ $SD^2 = .489$

ATTITUDE 16

" The Professors have a good knowledge Concerning the Existing Materials and Equipment at the University "

	FREQUENCY	PERCENTAGES
AGREE	11	3.9
NEUTRAL	72	25.5
DISAGREE	179	63.5
N. R.	20	7.1
TOTAL	282	100.0

$M = 2.641$ $SD = .561$ $SD^2 = .315$

ATTITUDE 17

" The Audio-Visual Media Depersonalizes instruction "

	FREQUENCY	PERCENTAGES
AGREE	33	11.7
NEUTRAL	27	9.6
DISAGREE	205	72.7
N. R.	17	6.0
TOTAL	282	100.0

M = 1.625 SD = .692 SD^2 = .479

ATTITUDE 16

" The Professors have a good knowledge Concerning the Existing Materials and Equipment at the University "

	FREQUENCY	PERCENTAGES
AGREE	25	8.9
NEUTRAL	28	9.9
DISAGREE	210	74.5
N. R.	19	6.7
TOTAL	282	100.0

M = 2.703 SD = .633 SD^2 = .400

ATTITUDE 19

" The Professors Lose some of their Importance in the Classroom when Using Audio-Visual Media "

	FREQUENCY	PERCENTAGES
AGREE	20	7.1
NEUTRAL	23	8.2
DISAGREE	222	78.7
N. R.	17	6.0
TOTAL	282	100.0

M = 2.762 SD = .577 SD^2 = .333

ATTITUDE 20

" Professors Seem to be Doubtful about the Value of Audio-Visual Media for instruction "

	FREQUENCY	PERCENTAGES
AGREE	30	10.6
NEUTRAL	20	7.1
DISAGREE	215	76.2
N. R.	17	6.0
TOTAL	282	100.0

M = 2.698 SD = .662 SD^2 = .439

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